18" TFT LCD Colour Monitor

Service
Service
Service

EPA POLLUTION PREVENTER

DVI-D & D-SUB Dual Input/DDC/Audio
Auto Picture Adjustment/Wide Viewing Angle

180P1L/00(LG panel)

Service Manual

Horizontal frequencies
30 - 82 kHz

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ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

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飛利浦

PHILIPS

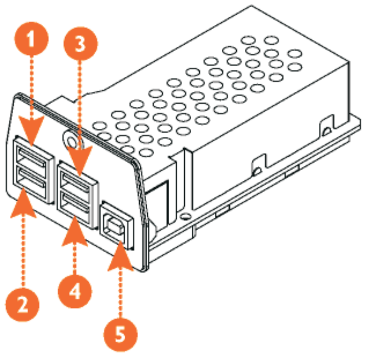
USB Connections & USB Hub installation

USB Introduction

USB (Universal Serial Bus) is an innovation in connecting your IBM-compatible computer to your monitor. By using the optional USB HUB, you will be able to connect optional USB type keyboards, mice, printers, and other peripherals to your monitor instead of having to connect them to your computer. This will give you greater flexibility in setting up your system. Plus, you will have true plug-and-play capability.

Description of the USB Hub

USB Hub supports four down stream ports and one upstream port. With its 12 Mbps; This USB Hub supplement the full-speed and low-speed PC desktop peripherals with plug-and-play capability and user-friendly interface.



1) Downstream Port #1

2) Downstream Port #2

3) Downstream Port #3

4) Downstream Port #4

5) Upstream Port

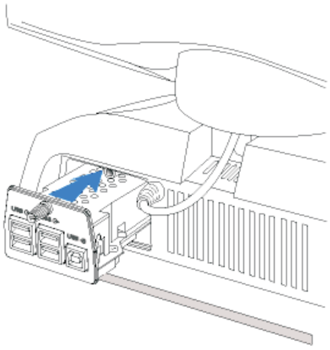
Installing Your USB Hub

System requirements

Hardware: A PC which supports the USB function and has a USB connector.
Software: Windows system which supports USB (OSR2.1 or higher).

Installation of USB Hub

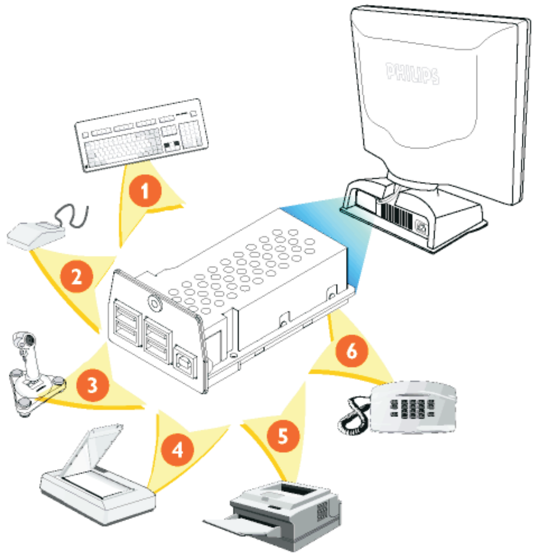
1. Turn off the monitor and unplug the power card.
2. Remove the cover of "USB BAY" at the back of the monitor.
3. Insert USB Hub into the slot.



4. Fix the USB Hub to the monitor by screwing.
5. Do not tighten the fixing nut excessively (use fingers to tighten screws). If screwed too tight, the unit may not connect properly!
6. Plug-in the power cord and turn on the monitor.
7. The two ends of USB cable attached are different. Plug in the square end into the "upstream" connector of the USB Hub.
8. Plug-in the other end into the USB connector of the PC.

Application

Just a few peripherals you can connect to your USB Hub .



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Flat Panel Adjust (FP Adjust)

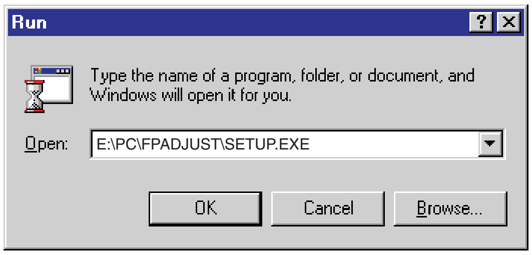
Fpadjust program

The Flat Panel Adjust (FPadjust) software helps you to find the best setting for your Philips LCD monitor. It allows you to adjust the image performance of LCD monitor, such as RESOLUTION, AUTO ADJUSTMENT, POSITION, CONTRAST, IMAGE OPTIMIZATION.

Note: Image optimization function is only available for analog video signals.

Install and Run FPadjust

In "MS Windows 95/98" environment : For example
1. Insert CD-DFU(3138 117 01953) to your CD-ROM driver.
2. Run "E:\PC\FPADJUST\SETUP.EXE" as Fig. 1. (Replace E by the letter of your CD-ROM driver)


Run
Type the name of a program, folder, or document, and Windows will open it for you.
OK
Cancel
Browse...

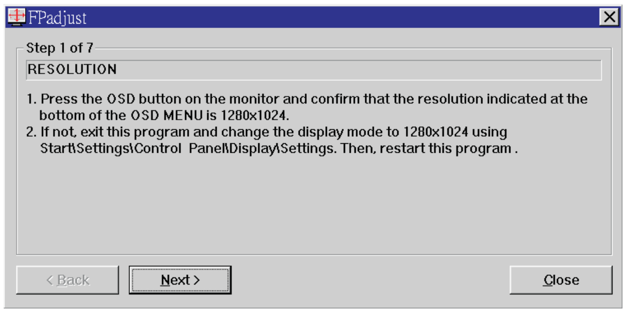
Open: E:\PC\FPADJUST\SETUP.EXE

Fig. 1

3. Then follow the instructions to install the FPadjust program.

When finish, double click FPadjust icon " ", then the description (can be moved by mouse) and background pattern come on the screen for image adjustment.

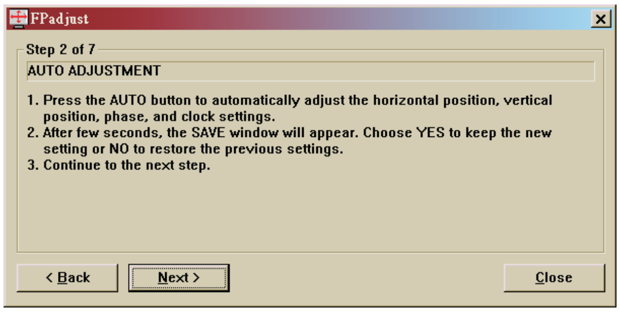
FPadjust program is working as a pattern generator to provide the pattern display on the screen for the adjustment of CONTRAST, CLOCK, PHASE ...etc. Please follow the steps below to adjust your PHILIPS Flat Panel Monitor for best display quality.



Step 1 of 7

RESOLUTION

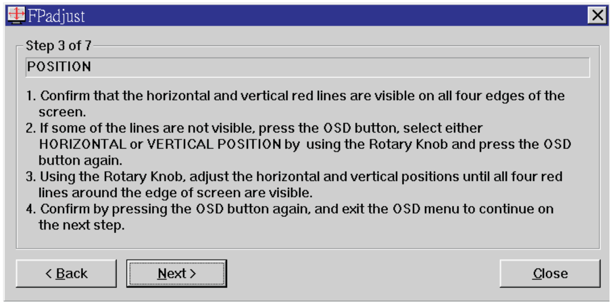
1. Press the OSD button on the monitor and confirm that the resolution indicated at the bottom of the OSD MENU is 1280x1024.
2. If not, exit this program and change the display mode to 1280x1024 using Start\Settings\Control Panel\Display\Settings. Then, restart this program .



Step 2 of 7

AUTO ADJUSTMENT

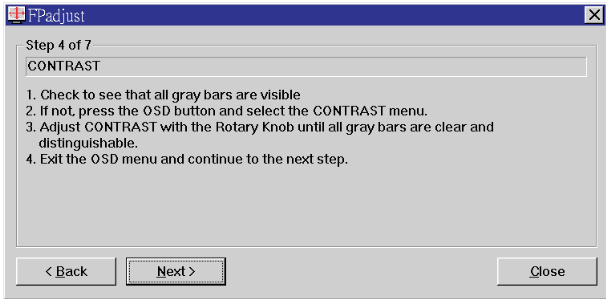
1. Press the AUTO button to automatically adjust the horizontal position, vertical position, phase, and clock settings.
2. After few seconds, the SAVE window will appear. Choose YES to keep the new setting or NO to restore the previous settings.
3. Continue to the next step.



Step 3 of 7

POSITION

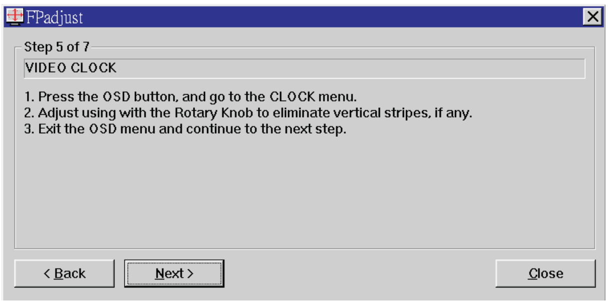
1. Confirm that the horizontal and vertical red lines are visible on all four edges of the screen.
2. If some of the lines are not visible, press the OSD button, select either HORIZONTAL or VERTICAL POSITION by using the Rotary Knob and press the OSD button again.
3. Using the Rotary Knob, adjust the horizontal and vertical positions until all four red lines around the edge of screen are visible.
4. Confirm by pressing the OSD button again, and exit the OSD menu to continue on the next step.



Step 4 of 7

CONTRAST

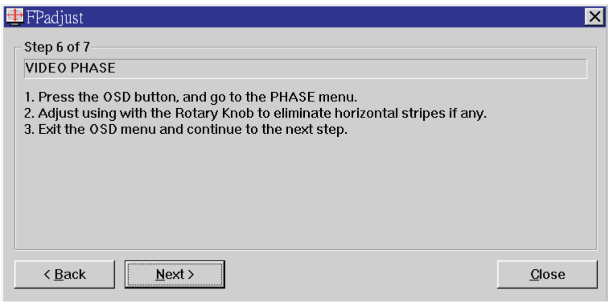
1. Check to see that all gray bars are visible
2. If not, press the OSD button and select the CONTRAST menu.
3. Adjust CONTRAST with the Rotary Knob until all gray bars are clear and distinguishable.
4. Exit the OSD menu and continue to the next step.



Step 5 of 7

VIDEO CLOCK

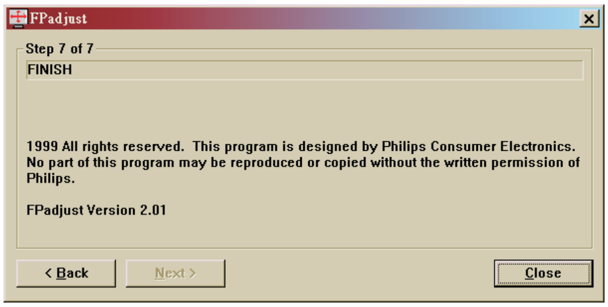
1. Press the OSD button, and go to the CLOCK menu.
2. Adjust using with the Rotary Knob to eliminate vertical stripes, if any.
3. Exit the OSD menu and continue to the next step.



Step 6 of 7

VIDEO PHASE

1. Press the OSD button, and go to the PHASE menu.
2. Adjust using with the Rotary Knob to eliminate horizontal stripes if any.
3. Exit the OSD menu and continue to the next step.



Step 7 of 7

FINISH

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FPadjust Version 2.01

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Definition of Pixel Defects

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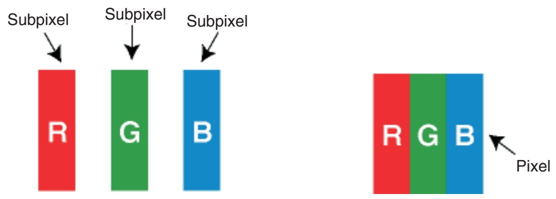
0. General

This section explains the different types of pixel defects and defines acceptable defect levels of each type. In order to qualify for repair or replacement under warranty, the number of pixel defects on a TFT LCD panel must exceed these acceptable levels.

1. Definition of Pixels and Subpixels

A pixel, or picture element , is composed of three subpixels in the primary colors of red, green and blue. Many pixels together from an image. When all subpixels of a pixel are lit, the three colored subpixels together appear as a single white pixel. When all are dark, the three colored subpixels together appear as a single black pixel. Other combinations of lit and dark subpixels appear as single pixels of other colors.

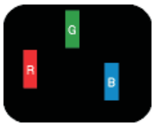


2. Types of Pixel Defects

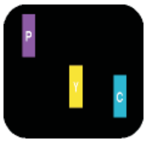
Pixel and subpixel defects appear on the screen in different ways.

Bright dot defects
Bright dot defects appear as pixels or subpixels that are always lit or “On”. These are the types of bright dot defects:.

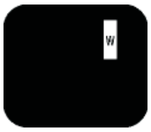
One lit red, green or blue subpixel



Two adjacent lit subpixels:
- Red + Blue = Purple
- Red + Green = Yellow
- Green + Blue = Cyan (Light Blue)

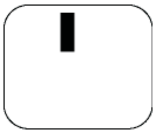


Three adjacent lit subpixels
(One white pixel)

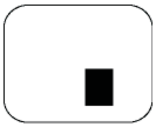


Black dot defects
Black dot defects appear as pixels or subpixels that are always dark or “off”. These are the types of black dot defects:

One dark subpixel



Two or three adjacent dark subpixels



3. Pixel Defect Tolerances

In order to qualify for repair or replacement due to pixel defects during the warranty period, a TFT LCD panel in a PHILIPS flat panel monitor must have pixel or subpixel defects exceeding the tolerances listed in the following tables.

BRIGHT DOT DEFECTS	ACCEPTABLE LEVEL			
MODEL	**140S**	**150B**	**151 AX & 150P**	**180P & 181 AS**
1 lit subpixel	10 or fewer	10 or fewer	6 or fewer	10 or fewer
2 adjacent lit subpixels	3 or fewer	3 or fewer	2 or fewer	3 or fewer
3 adjacent lit subpixels (one white pixel)	None	None	None	None
Distance between two bright dot defects*	12 mm or more	12 mm or more	14 mm or more	14 mm or more
Bright dot defects within 20 mm circle	6 or fewer	6 or fewer	4 or fewer	4 or fewer
Total bright dot defects of all types	10 or fewer	10 or fewer	6 or fewer	10 or fewer

BLACK DOT DEFECTS	ACCEPTABLE LEVEL			
MODEL	**140S**	**150B**	**151 AX & 150P**	**180P & 181 AS**
1 dark subpixel	10 or fewer	10 or fewer	6 or fewer	10 or fewer
2 adjacent dark subpixels	3 or fewer	3 or fewer	1 or fewer	2 or fewer
3 adjacent dark subpixels	None	None	None	1 or fewer
Distance between two black dot defects*	4 mm or more	4 mm or more	4 mm or more	14 mm or more
Black dot defects within 20 mm circle*	6 or fewer	6 or fewer	4 or fewer	5 or fewer
Total black dot defects of all types	10 or fewer	10 or fewer	6 or fewer	15 or fewer

TOTAL DOT DEFECTS	ACCEPTABLE LEVEL			
MODEL	**140S**	**150B**	**151 AX & 150P**	**180P & 181 AS**
Total bright or black dot defects of all types	12 or fewer	12 or fewer	10 or fewer	15 or fewer

Note: 1 or 2 adjacent subpixel defects = 1 dot defect

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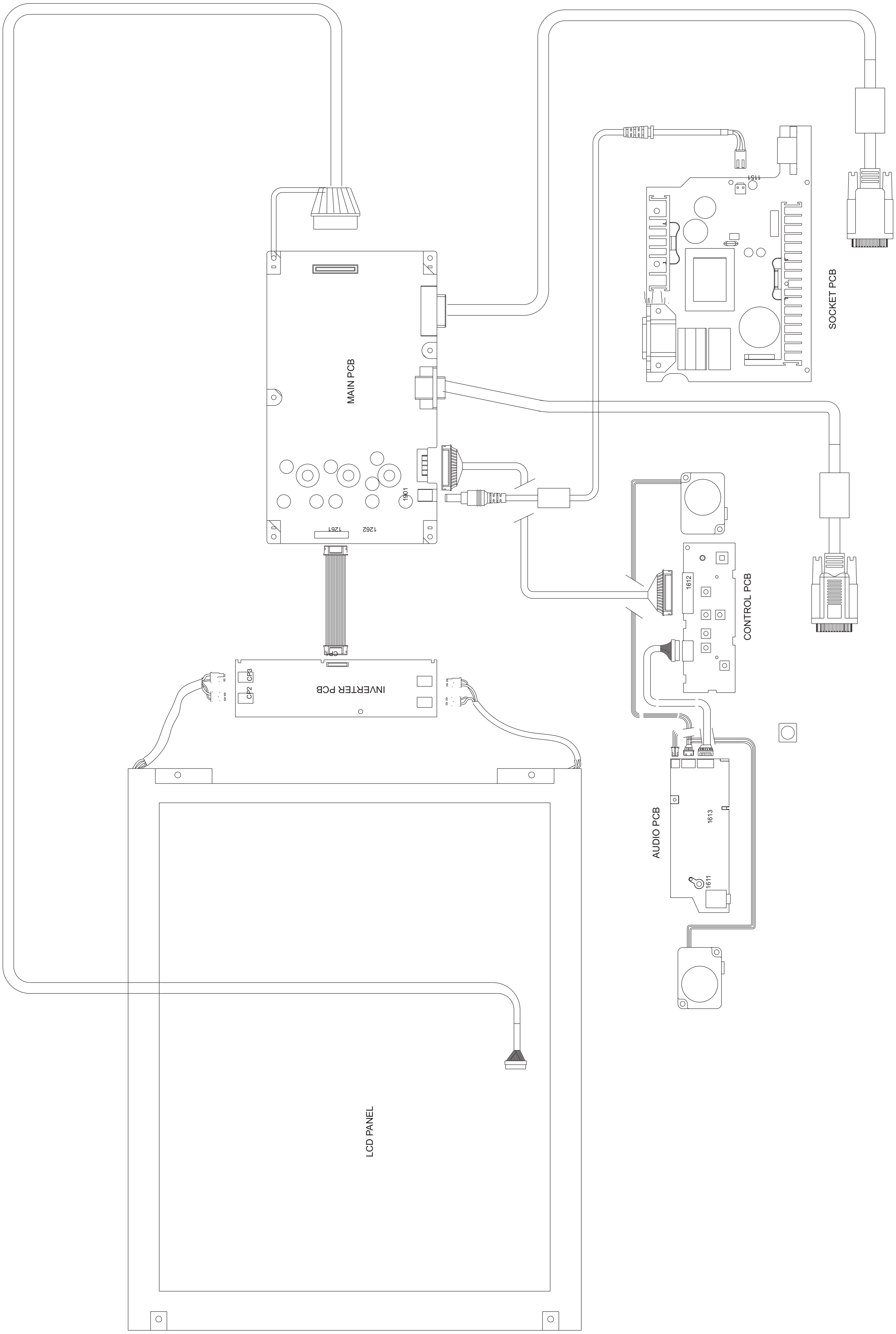
Wiring Diagram


1151
SOCKET PCB
MAIN PCB
1901
1261
1262
1612
CONTROL PCB
CP1
CP2
CP3
INVERTER PCB
AUDIO PCB
1613
1611
LCD PANEL

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Mechanical instructions

General

To be able to perform measurements and repairs on the circuit boards, Spread a soft mat underneath to avoid damaging the LCD surface.

1. Rear cover removal

Step 1 : To remove the back cover, press up to disengage the clips on each side, then pull and lift as shown in Fig.1

Step 2 : Remove plastic ring from the hinge. See Fig. 2

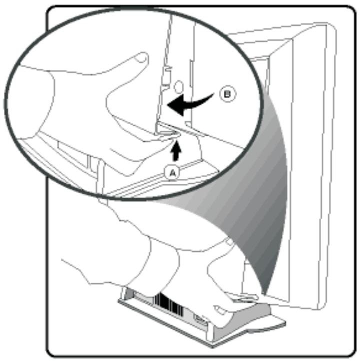

Fig. 1

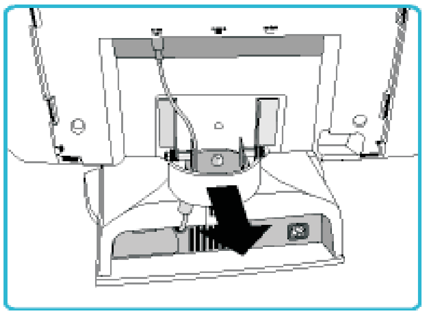

Fig. 2

2. LCD panel removal and Fluorescent lamp replacement

Step 1 : Remove two screws (A) and unplug 18VDC power connector (B). See Fig. 3

Step 2 : Remove four screws (C). See Fig. 4

Step 3 : Remove protective cover. See Fig. 5

Step 4 : Remove eight screws (D). See Fig. 6

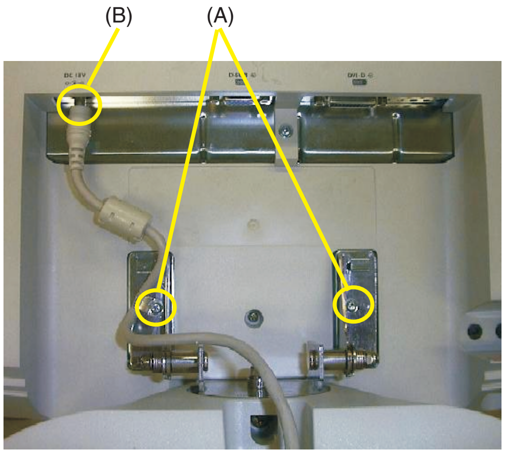

Fig. 3

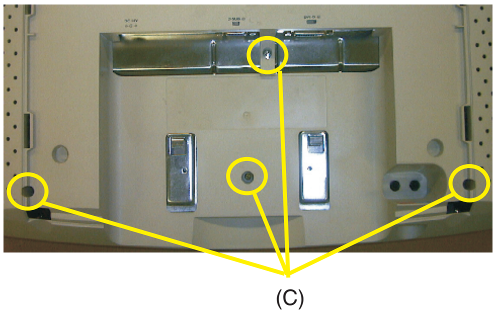

Fig. 4

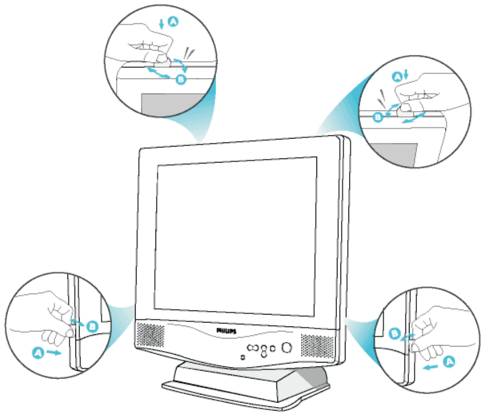

Fig. 5

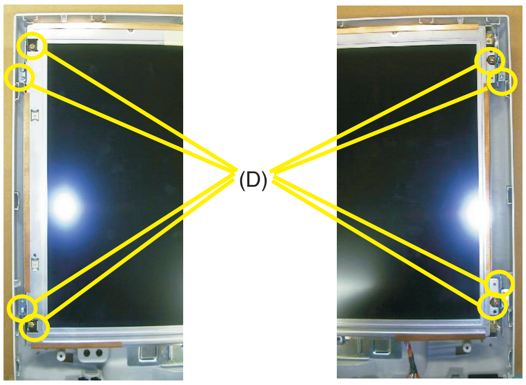

Fig. 6

Step 5 : Remove four screws (E). See Fig.7

Step 6 : Disconnect five connectors (F). See Fig. 8

Step 7 : Remove two screws (G). Draw out upper and lower lamp set. See Fig. 9

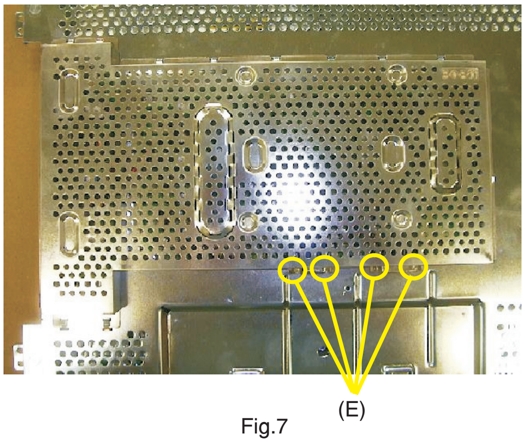

Fig.7

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Mechnical instructions

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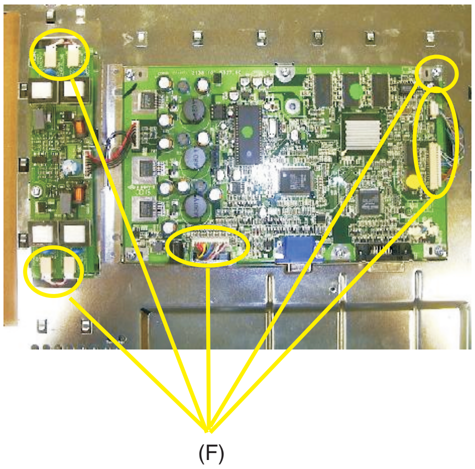

Fig. 8

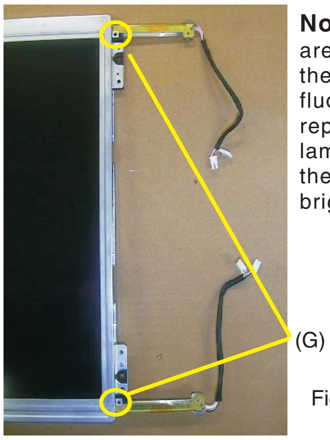

Fig. 9

Note: The fluorescent lamps are consumable. When replace the lamps, both upper and lower fluorescent lamps should be replaced in all cases. If only one lamp is replaced on either side, there can be unevenness in the brightness.

3. Main panel and inverter panel removal

Step 1 : Disconnect three connectors (H). See Fig. 10
Step 2 : Remove seven screws (I). See Fig. 10

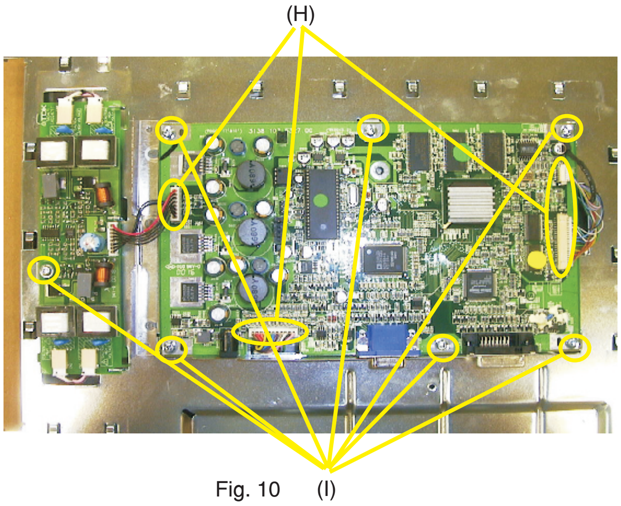

Fig. 10

4. Audio and control panel removal

Step 1 : Release five clips (J).
Step 2 : Disconnect two connectors (K), Remove screw (M). See Fig. 11

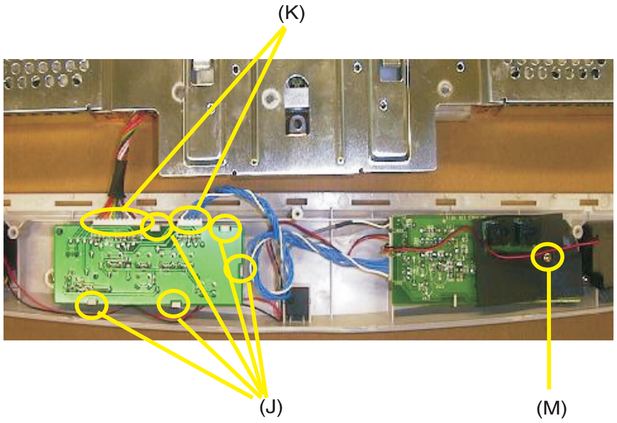

Fig. 11

5. Inverter PCB removal

Step 1 : Disconnect three connectors (A) and remove screw (B). See Fig. 12

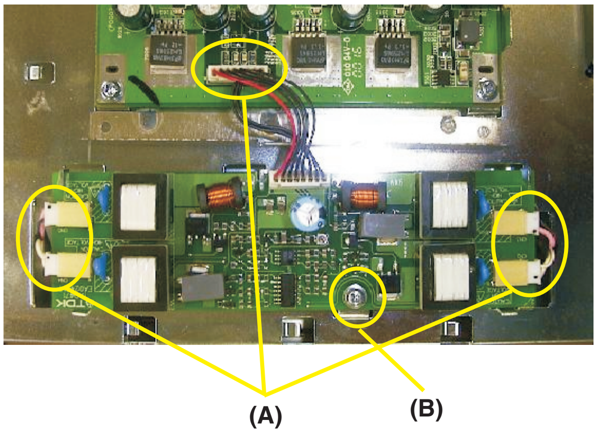

Fig. 12

6. Disassemble the pedestal

Step 1 : Remove two screws (C). See Fig. 2
Step 2 : Disconnect one connector (E), remove two screws (D), release three clips (F). See Fig. 3

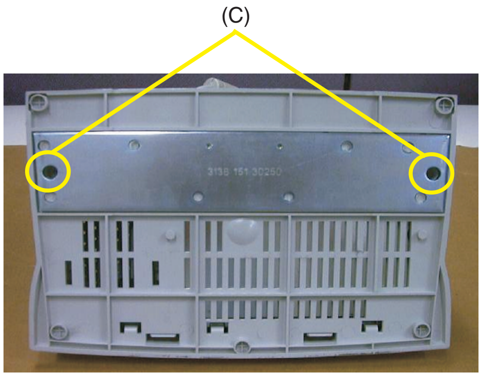

Fig. 2

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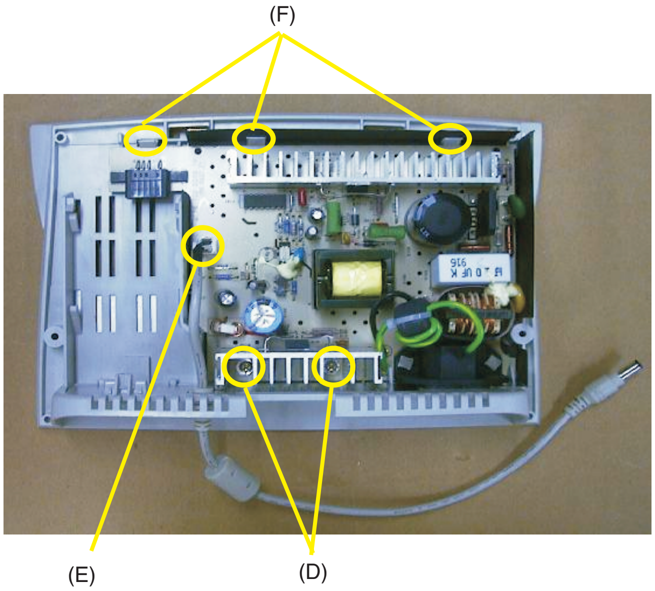
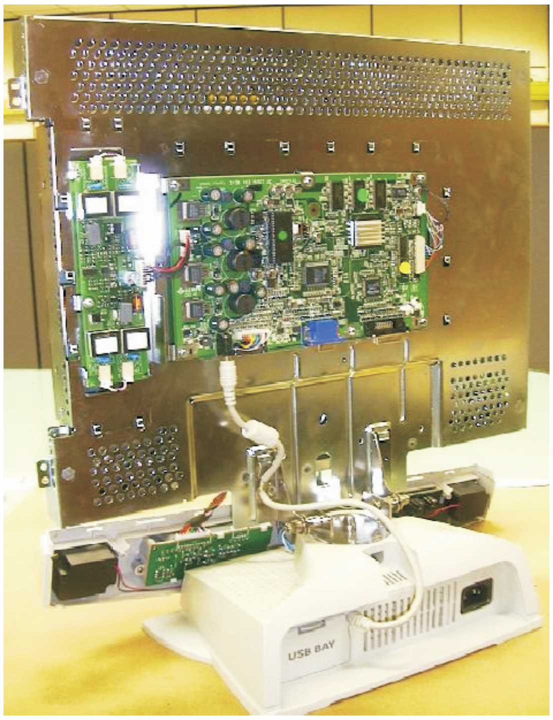


Fig. 3

Recommended service position



Electrical instructions

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0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI VGA 1024 V6-1.04/PH BETA4 interface card
- PGA 1024 (4822 212 30916), Mach 8.
- PGA 1280 (4822 212 30917), Mach 32.
- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 107kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727 19896 (ATI1024), or 4822 727 20273 (PGA 1280), or 4822 727 21046 (GPT-1600).

0.1 **With normal VGA card:**
If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.

0.2 **AC/DC Measurement:**
The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "gray scale".

1.General points

1.1 During the test and measuring, supply a distortion free AC mains voltage to the apparatus via an isolated transformer with low internal resistance.

1.2 All measurements mentioned hereafter are carried out at a normal mains voltage (90 - 132 VAC for USA version, 195 -264 VAC for EUROPEAN version, or 90 - 264 VAC for the model with full range power supply, unless otherwise stated.)

1.3 All voltages are to be measurement or applied with respect to ground, unless otherwise stated. Note: don't use heat-sink as ground.

1.4 The test has to be done on a complete set including LCD panel in a room with temperature of 25 +/- 5 degree C.

1.5 All values mentioned in these test instruction are only applicable of a well aligned apparatus, with correct signal.

1.6 The letters symbols (B) and (S) placed behind the test instruction denotes
(B): carried out 100% inspection at assembly line
(S): carried out test by sampling

1.7 The white balance (color temperature), has to be tested in subdued lighted room.

1.8 Repetitive power on/off cycle are allowed except it should be avoided within 6 sec.

2. Input signal

2.1 Signal type
Video : 0.7 Vp-p linear, positive polarity
Sync. : TTL level, separate, positive or negative polarity
Signal source: pattern generator format as attachment.
(table 1 to 16) Reference generator : CHROMA 2200 or 2250

2.2 Input signal mode
Pre-set 32 modes

Factory preset video resolution

#	Resolution	Frequency	Pixel rate	Sync	Comment
1	640X350	31.5K/70HZ	25.175	(+/-)	IBM VGA 10h
2	720X400	31.5K/70HZ	28.322	(-/+)	IBM VGA 3h
3	640X480	37.5K/75HZ	31.501	(-/-)	
4	640X480	43.3K/85HZ	36	(-/-)	
5	640X480	37.9K/72HZ	31.5	(-/-)	
6	640X480	35.0K/67HZ	30.24	(-/-)	
7	640X480	31.5K/60HZ	25.175	(-/-)	
8	800X600	35.2K/56HZ	36	(+/+)	
9	800X600	46.9K/75HZ	49.498	(+/+)	
10	800X600	37.9K/60HZ	40	(+/+)	
11	800X600	53.7K/85HZ	56.251	(+/+)	
12	832X624	49.7K/75HZ	57.28	(+/+)	MAC
13	800X600	48.1K/72HZ	50	(+/+)	
14	1024X768	60.0K/75HZ	78.75	(+/+)	
15	1024X768	48.4K/60HZ	65	(-/-)	
16	1024X768	56.5K/70HZ	75	(-/-)	
17	1024X768	61.1K/76HZ	83.096	(+/+)	IBM XGA-2
18	1024X768	68.7K/85HZ	94.5	(+/+)	
19	1152X864	67.5K/75HZ	108	(+/+)	
20	1152X864	63.9K/70HZ	94.5	(+/+)	non-VESA
21	1152X864	54.0K/60HZ	79.9	(+/+)	non-VESA
22	1152X870	68.7K/75HZ	100	(-/-)	MAC
23	1152X900	61.8K/66HZ	92.94	serr-	SUN Mode IV
24	1152X900	71.8K/76HZ	108	(+/+)	SUN Mode II
25	1280X960	60.0K/60HZ	108	(+/+)	
26	1280X960	75.0K/75HZ	129.895	(+/+)	non-VESA
27	1280X1024	76.0K/72HZ	130.223	(+/+)	DOS/V
28	1280X1024	64.0K/60HZ	108	(+/+)	
29	1280X1024	80.0K/75HZ	135	(+/+)	
30	1280X1024	81.1K/76HZ	135.008	(-/-)	SUN Mode I
31	1280X1024	71.7K/67HZ	117	(+/+)	SUN Mode V
32	688X556	31.3K/50HZ	27	(-/+)	TV-PAL

3. AC Adaptor

3.1Setup the AC I/P at 90VAC, and Output DC loading at 4 Amp, The DC output voltage is 18 ± 1 V DC

3.2 DC setting
1003: all on (connect 3.3V,5V DC power to main board)
1005: all on (connect 12V DC power to main board)

4. Display Adjustment

4.1Input signals check
In factory mode, use 64 gray level and set the R,G,B sub gain to 100%.

4.2 Display quality test
Use timing mode as described in 2.2, and use the POPO (pixel on pixel off) pattern to adjust the clock until no stripe and adjust the phase until clear picture. Check all pre-setting 32 modes.

4.2.1 SOG mode test : Use following timing for SOG test

64 KHz/60Hz, 1280 X 1024, pixel=108 MHz

Horizontal	Vertical
Frame border = 0	Frame border = 0
Total size = 15.620 us	Total size = 16.670 ms
Display size = 11.852 us	Display size = 16.000 ms
Rear porch = 2.000 us	Rear porch = 0.580 ms
Sync width = 1.000 us	Sync width = 0.080 ms
Sync polarity = -	Sync polarity = -

Sync on green

4.3 Check of WHITE-D (B)
Apply a 80kHz/75Hz signal with white pattern, set brightness control at 80%, and contrast control at 50%. Adjust the R, G, B sub_gain, for the screen center, the 1931 CIE chromaticity (X, Y) co-ordinates shall be;

	9300°K	6500°K
x (center)	0.281 ± 0.005	0.312 ± 0.005
y (center)	0.311 ± 0.005	0.338 ± 0.005

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Use Minolta CA-110 for color coordinates and luminance check.
Luminance; 155 Nits (LG) in the center of the screen.

4.4 Check the digital interface
Set the delay time to be 6 nsec.
Check the 64 gray level color poor & noise condition.

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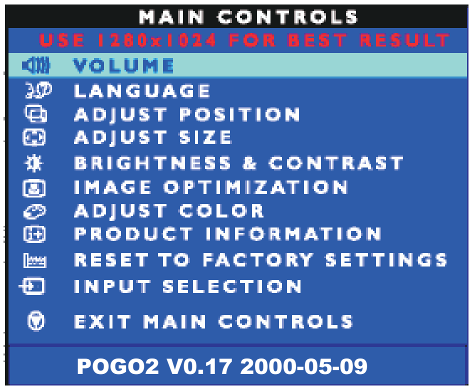
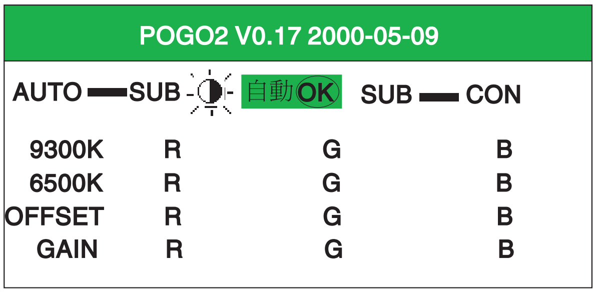
Factory Mode Adjustment

Entering Factory Adjustment Menu

Push OK & AUTO buttons then power on the monitor, release them after picture display normally. Press OK button to bring up OSD menu of factory mode as shown below.


MAIN CONTROLS
USE 1280x1024 FOR BEST RESULT
VOLUME
LANGUAGE
ADJUST POSITION
ADJUST SIZE
BRIGHTNESS & CONTRAST
IMAGE OPTIMIZATION
ADJUST COLOR
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
POGO2 V0.17 2000-05-09

Use ▼ button to select factory adjustment indication (for example: POGO2 V0.17 2000-05-09), which is the entrance of the factory adjustment menu, press OK button to access it. The window shows as below.

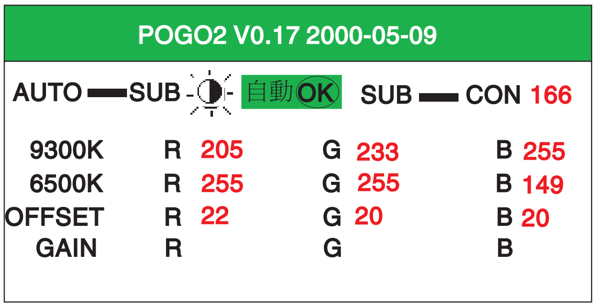


POGO2 V0.17 2000-05-09

AUTO — SUB ◑ 自動OK SUB — CON

9300K	R	G	B
6500K	R	G	B
OFFSET	R	G	B
GAIN	R	G	B

Use ▲ or ▼ buttons to select SUB-CON, 9300K R G B,..etc.
Use ◀ or ▶ buttons to decrease/increase the value of each item
AUTO : adjust Sub-brightness & Sub-contrast automatically.



POGO2 V0.17 2000-05-09

AUTO — SUB ◑ 自動OK SUB — CON 166

9300K	R 205	G 233	B 255
6500K	R 255	G 255	B 149
OFFSET	R 22	G 20	B 20
GAIN	R	G	B

◑ Contrast adjustment (Sub-Contrast). Use this menu item to adjust the contrast gain of pre-amp ranges from 0 to 255.

9300K R G B
6500K R G B
Color temperature gain adjustment. Use these menu items to adjust the RGB gains of pre-amp for different color temperatures, ranges from 0 to 255.

OFFSET R G B
Sub-Brightness adjustment. Use this menu item to adjust the brightness level (DC-level) of pre-amp range from 0 to 255.

(PS: The “Offset R G B” function can be used on reduce or eliminate snowy noise on the background when the resolution of video signal is 1024 X 768 vertical 60Hz. Slightly increase or decrease the value until snowy noise completely disappear.)

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Safety Test Requirements

All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both *Hipot* and *Ground Continuity* testing.

HI-POT TEST INSTRUCTION

1. Application requirements

1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.

1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.

2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.

2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: <=0.09+R ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time	set at 2 seconds		

2.2.1 The test with AC voltage is only for production purpose, **Service center shall use DC voltage.**

2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute. No breakdown during the test.

2.2.3 The test voltage must be maintained within the specified voltage + 5%.

2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

3. Equipments and Connection

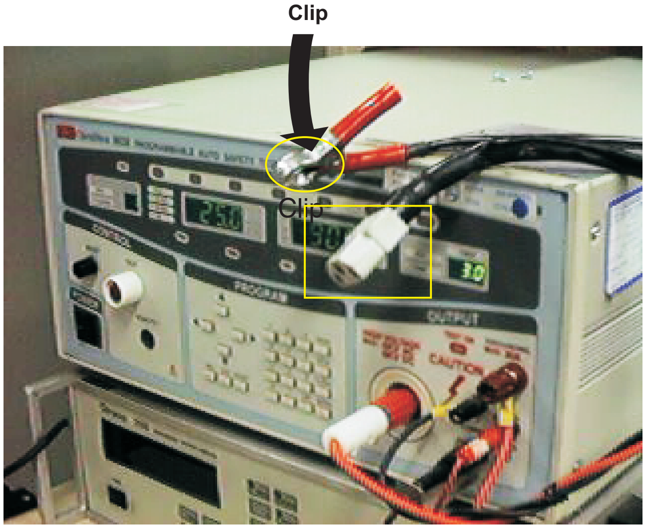
3.1. Equipments

For example :

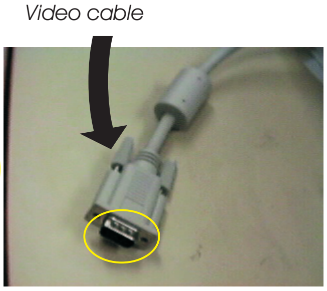
- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
- ChenHwa 510B Digital Grounding Continuity Tester
- ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2. Connection

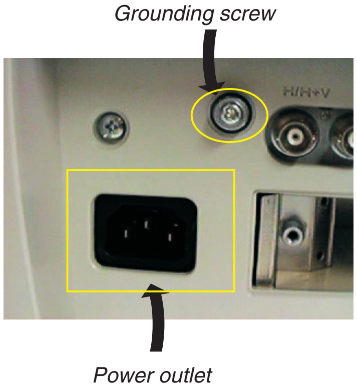
* Turn on the power switch of monitor before Hipot and Ground Continuity testing.



(ChenHwa 9032 tester)



Connect the "video cable" or "grounding screw" to the CLIP on your tester.



Connect the power cord to the monitor.

(Rear view of monitor)

4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

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DDC Instructions

1. General

DDC Data Re-programming

In case the DDC data memory IC or main EEPROM which storage all factory settings were replaced due to a defect, the serial numbers have to be re-programmed.

It is advised to re-soldered DDC IC and main EEPROM from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information

Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

DDC EDID structure
For Analog interface: Standard Version 3.0
Structure Version 1.3
For Digital inferface: Standard Version 3.0
Structure Version 1.3

2. System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98.
3. EDID30.EXE program (3138 106 10075) shown as Fig. 1
4. A/D Alignment kits (3138 106 10079) shown as Fig. 2. This kit contents:
    a. Alignment box x1
    b. Printer cable x1
    c. D-Sub cable x1
    d. (DVI-D) to (D-Sub) cable x1

Note: The EDID30.EXE (Release Version 1.5 1999.11.17)is a windows-based program, which cannot be run in MS-DOS. Meanwhile, it is also fully compatible with previous programs DDCV2X.EXE series(MS-DOS based).

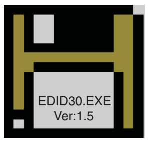
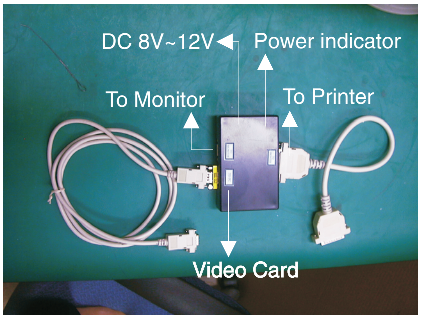
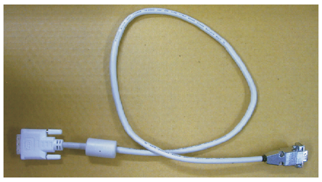


Figure 1 Diskette with EDID30.EXE





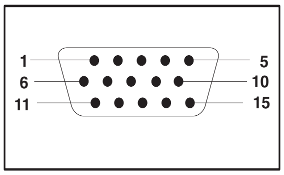
(DVI-D) to (D-Sub) cable

Fig. 2 A/D Alignment Kits

Note: The alignment box has already build-in a batteries socket for using batteries (9V) as power source. Pull out the socket by remove four screws at the rear of box. Please do not forget that remove batteries after programming. The energy of batteries can only drive circuits for a short period of time.

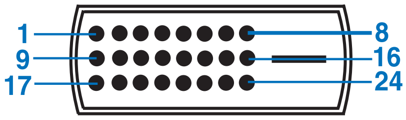
3. Pin assignment

A. 15-pin D-Sub Connector



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	+5V
2	Green video input	10	Ground
3	Blue video input	11	Ground
4	Ground	12	Serial data line(SDA)
5	No Connected	13	H.Sync
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

B. DVI-D Connector



Pin No.	Assignment	Pin No.	Assignment
1	TMDS Data 2-	13	TMDS Data 3+
2	TMDS Data 2+	14	+5V Power
3	TMDS Data 2/4 Shield	15	Ground (+5V)
4	TMDS Data 4-	16	Hot Plug Detect
5	TMDS Data 4+	17	TMDS Data 0-
6	DDC Clock	18	TMDS Data 0+
7	DDC Data	19	TMDS Data 0/5 Shield
8	No connect	20	TMDS Data 5-
9	TMDS Data 1-	21	TMDS Data 5+
10	TMDS Data 1+	22	TMDS Clock Shield
11	TMDS Data 1/3 Shield	23	TMDS Clock+
12	TMDS Data 3-	24	TMDS Clock-

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4. Configuration and procedure

There are three chips contained serial number on the circuit board, Analog DDC IC (7301), Digital DDC IC (7302) and main EEPROM (7204) which storage all factory settings. Following descirptions are the connection and procedure for Analog DDC IC and Digital DDC IC, the main EEPROM can be re-programmed along with Analog IC by enable “factory memory data write” function on the DDC program (EDID30.EXE).

Initialize alignment box

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before running programming software (EDID30.EXE). Following steps show you the procedures and connection.

Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
Step 2: Connecting printer cable and video cable of monitor as Fig. A
Step 3: Run the EDID30.EXE program until the main menu appears. This is for initialize alignment box.

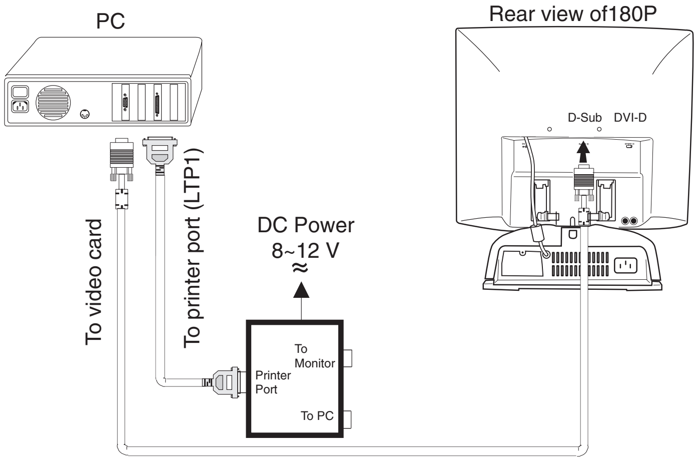

PC
Rear view of180P
D-Sub
DVI-D
To video card
To printer port (LTP1)
DC Power
8~12 V
≈
To Monitor
Printer Port
To PC

Fig. A

Re-programming Analog DDC IC

Step 1: After initialize alignment box, connecting all cables and box as Fig. 3
Step 2: Press and hold “ OK “ and “ AUTO “ buttons then power on the monitor.
Step 3: Follow the steps on DDC re-programming instructions to staring re-programming.

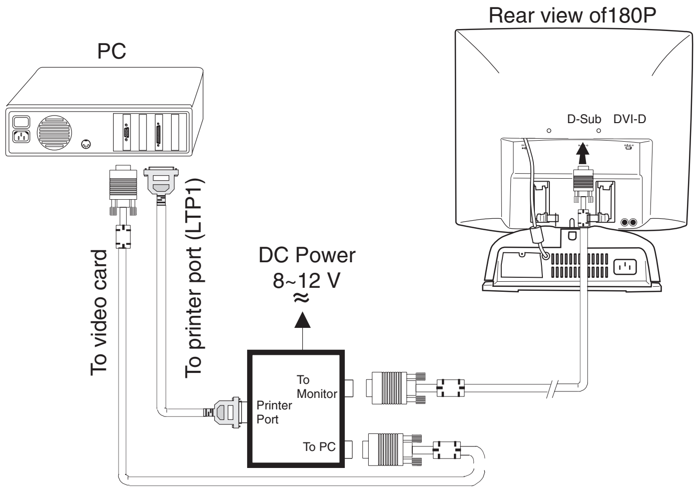

PC
Rear view of180P
D-Sub
DVI-D
To video card
To printer port (LTP1)
DC Power
8~12 V
≈
To Monitor
Printer Port
To PC

Fig. 3

Re-programming Digital DDC IC

Step 1: Connecting all cables and alignment box as shown on Fig. 4
Step 2: Press and hold “ OK “ and “ AUTO “ buttons then power on the monitor.
Step 3: Follow the steps on DDC re-programing instructions to starting re-programming.

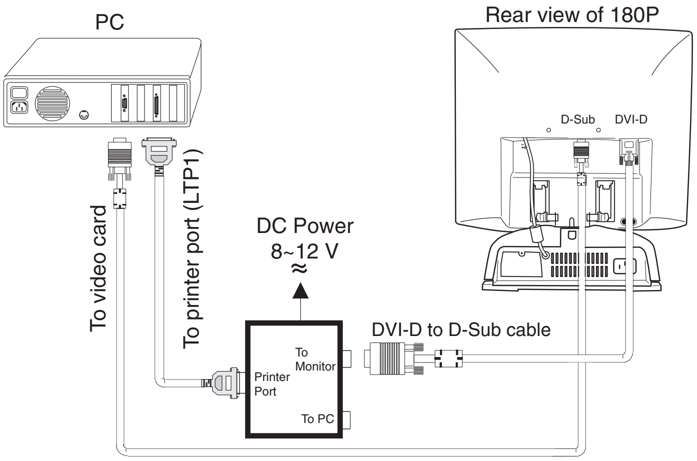

PC
Rear view of 180P
D-Sub
DVI-D
To video card
To printer port (LTP1)
DC Power
8~12 V
≈
DVI-D to D-Sub cable
To Monitor
Printer Port
To PC

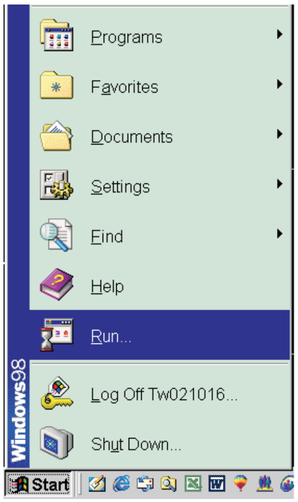
Fig. 4

5. DDC re-programming instructions

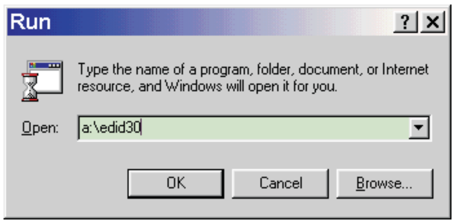
Start on DDC program

Start Microsoft Windows.

1. Insert the disk containing EDID30.EXE program into floppy disk drive.
2. Click Start , choose Run at start menu of Windows 95/98.


Programs
Favorites
Documents
Settings
Find
Help
Run...
Log Off Tw021016...
Shut Down...
Windows98
Start

3. At the submenu, type the letter of your computer’s floppy disk drive followed by :EDID30 (for example, A:\EDID30, as shown in Fig. 5).


Run
? X

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: a:\edid30

OK
Cancel
Browse...

Fig. 5

DDC Instructions

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4. Click OK button. The main menu appears (as shown on Fig. 6).

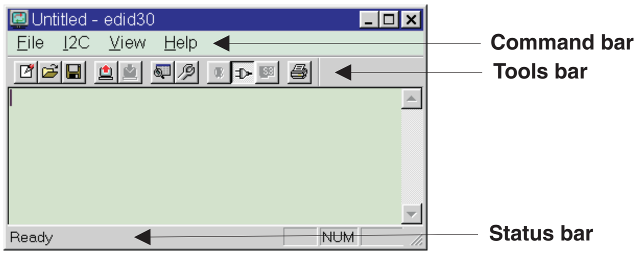
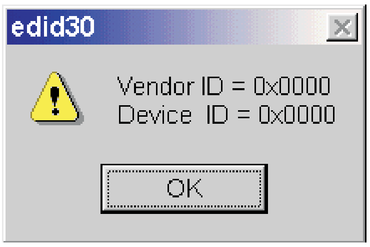


Fig. 6

Note: If the connection is improper, you will see the following error message before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the procedure has been performed properly.

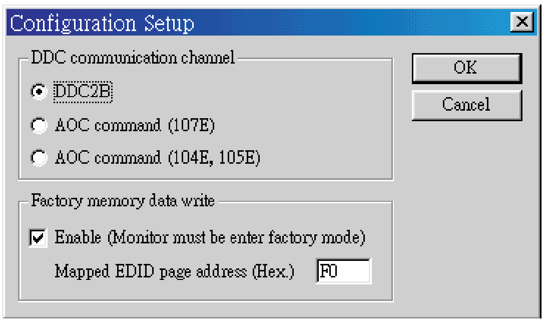


Vendor ID = 0x0000
Device ID = 0x0000

Loading DDC data from monitor

1. Click icon on the tools bar to bring up the Configuration Setup windows as Fig.7
2. Select the DDC2B as the communication channel.
3. Enable Factory memory data write function and fill in page address “F0” to the block.
4.. Click OK button to confirm your selection.

Note: The Factory memory data write function will allow EDID30 to rewrite serial numbers both Analog DDC IC and main EEPROM to make sure both S/N are exactly the same. You may confirm the function by checking the S/N at Product information of the OSD menu after restarting the monitor.

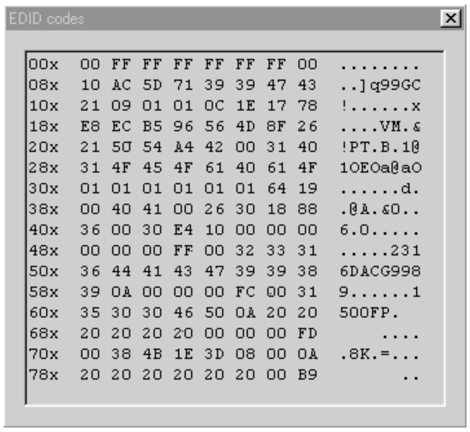


DDC communication channel
● DDC2B
○ AOC command (107E)
○ AOC command (104E, 105E)

Factory memory data write
☑ Enable (Monitor must be enter factory mode)
Mapped EDID page address (Hex.) F0

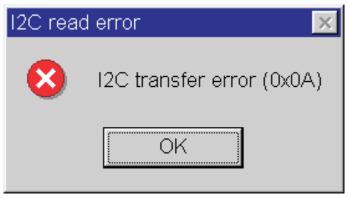
Fig. 7

5. Click icon to read DDC EDID data from monitor. The EDID codes will display on screen as following. (The EDID codes are depend on the model.) Meanwhile, The status bar will indicate 00% to 100% when reading.



```
00x  00 FF FF FF FF FF FF 00  ........
08x  10 AC 5D 71 39 39 47 43  ..]q99GC
10x  21 09 01 01 0C 1E 17 78  !......x
18x  E8 EC B5 96 56 4D 8F 26  ....VM.&
20x  21 50 54 A4 42 00 31 40  !PT.B.1@
28x  31 4F 45 4F 61 40 61 4F  1OEOa@aO
30x  01 01 01 01 01 01 64 19  ......d.
38x  00 40 41 00 26 30 18 88  .@A.&0..
40x  36 00 30 E4 10 00 00 00  6.0.....
48x  00 00 00 FF 00 32 33 31  .....231
50x  36 44 41 43 47 39 39 38  6DACG998
58x  39 0A 00 00 00 FC 00 31  9......1
60x  35 30 30 46 50 0A 20 20  500FP.
68x  20 20 20 20 00 00 00 FD      ....
70x  00 38 4B 1E 3D 08 00 0A  .8K.=...
78x  20 20 20 20 20 20 00 B9        ..
```

Note: During the loading, EDID30 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen (Fig. 8). Please confirm following steps to avoid this message.
1. The data structure of EDID was incorrect.
2. DDC IC that you are trying to load data is empty.
3. Wrong communication channel has set at configuration setup windows.
4. Cables loosed or poor contact of connection.

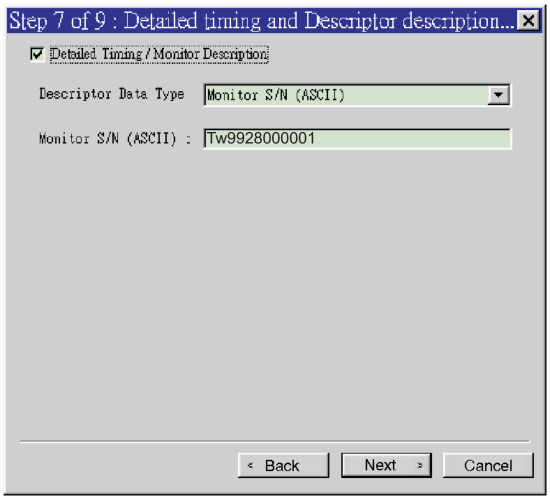


I2C transfer error (0x0A)

Fig. 8

Modify DDC data (Serial No.)

1. Click icon on the toosl bar.
2. Click Next > till the Step 7 of 9 window appears.
3. Type the new Serial No. (for example, Tw9928000001).
4. Click Next > till the last step window appears, then click Finish to exit the Step window.



☑ Detailed Timing / Monitor Description
Descriptor Data Type: Monitor S/N (ASCII)
Monitor S/N (ASCII) : Tw9928000001

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DDC Instructions

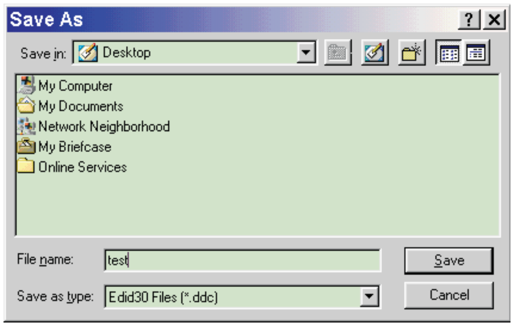
Write DDC data to monitor

1. Click icon from the tools bar to starting rewrite DDC data.
2. Click for confirmation.

Save DDC data as a file

Sometimes, you maybe need to save DDC data as a text file for using on other DDC chip. To save DDC data, follow the steps below:

1. Click icon on the tools bar and type a file name you like. The file format is ddc type which can be open by Microsoft WordPad.
2. Click Save button.

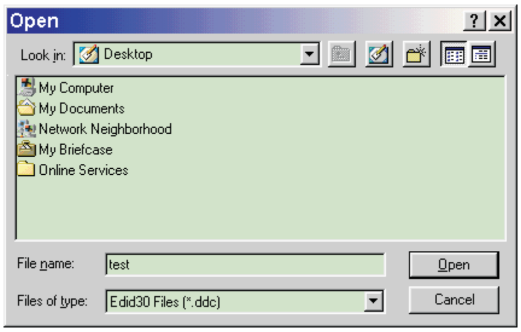

Save As
Save in: Desktop
My Computer
My Documents
Network Neighborhood
My Briefcase
Online Services
Save
Cancel

File name: test

Save as type: Edid30 Files (*.ddc)

Load DDC data from file

1. Click from the tools bar.
2. Select the file you want to open.
3. Click Open Button.


Open
Look in: Desktop
My Computer
My Documents
Network Neighborhood
My Briefcase
Online Services
Open
Cancel

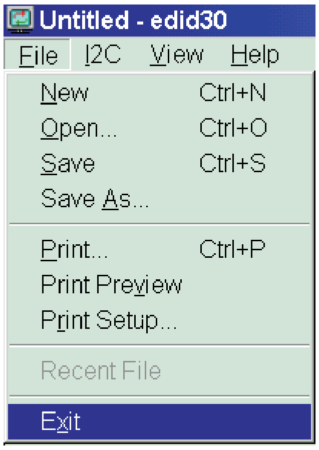
File name: test

Files of type: Edid30 Files (*.ddc)

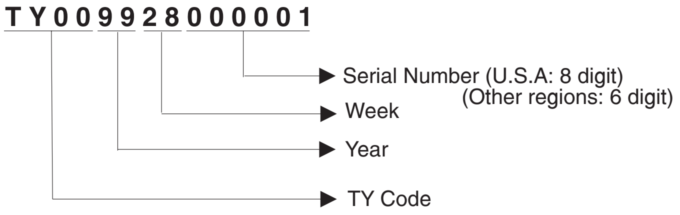
4. Now you can re-programming DDC data which you just loaded from a file, please be confirmed that model and serial number are correct and match with the monitor you are trying to re-write.

Exit DDC program

1. Click file command on the command bar then select Exit.


Untitled - edid30
File
I2C
View
Help
New Ctrl+N
Open... Ctrl+O
Save Ctrl+S
Save As...
Print... Ctrl+P
Print Preview
Print Setup...
Recent File
Exit

Definition of Serial Number


T Y 0 0 9 9 2 8 0 0 0 0 0 1
Serial Number (U.S.A: 8 digit)
(Other regions: 6 digit)
Week
Year
TY Code

TY----Chungli
CX----Dong Guan
HD----Hungary
BZ----Suzhou

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DDC Instructions

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THE DISPLAY DATA CHANNEL (DDC)1/2B CONTENT INCLUDING

(FOR LG ANALOG)

Vendor/Product Identification
ID Manufacturer Name : PHL
ID Product Code : 1810 (HEX.)
ID Serial Number : 123456 (HEX.)
Week of Manufacture : 18
Year of Manufacture : 2000

EDID Version, Revision
Version : 1
Revision : 3

Basic Display Parameters/Features
Video Input Definition : Analog Video Input
0.700V/0.300V (1.00Vpp)
without Blank-to-Black Setup
Separate Sync
Composite Sync
Sync on Green
Serration required

Maximum H Image Size : 36
Maximum V Image Size : 29

Display Transfer Characteristic : 2.1
(gamma)

Feature Support (DPMS) : Standby
Suspend
Active Off

Display Type : RGB color display
Preferred Timing Mode : Detailed timing block 1

Color Characteristics
Red X coordinate : 0.625
Red Y coordinate : 0.34
Green X coordinate : 0.285
Green Y coordinate : 0.605
Blue X coordinate : 0.15
Blue Y coordinate : 0.065
White X coordinate : 0.281
White Y coordinate : 0.311

Established Timings
Established Timings I : 720 x 400 @70Hz (IBM,VGA)
640 x 480 @60Hz (IBM,VGA)
640 x 480 @67Hz (Apple,Mac II)
640 x 480 @72Hz (VESA)
640 x 480 @75Hz (VESA)
800 x 600 @56Hz (VESA)
800 x 600 @60Hz (VESA)

Established Timings II : 800 x 600 @72Hz (VESA)
800 x 600 @75Hz (VESA)
832 x 624 @75Hz (Apple,Mac II)
1024 x 768 @60Hz (VESA)
1024 x 768 @70Hz (VESA)
1024 x 768 @75Hz (VESA)
1280 x 1024 @75Hz (VESA)

Manufacturer's timings : 1152 x 870 @75Hz (Apple,Mac II)

Standard Timing Identification #1
Horizontal active pixels : 640
Aspect Ratio : 4:3
Refresh Rate : 85

Standard Timing Identification #2
Horizontal active pixels : 800
Aspect Ratio : 4:3
Refresh Rate : 85

Standard Timing Identification #3
Horizontal active pixels : 1024
Aspect Ratio : 4:3
Refresh Rate : 85

Standard Timing Identification #4
Horizontal active pixels : 1024
Aspect Ratio : 4:3
Refresh Rate : 75

Standard Timing Identification #5
Horizontal active pixels : 1152
Aspect Ratio : 4:3
Refresh Rate : 70

Standard Timing Identification #6
Horizontal active pixels : 1152
Aspect Ratio : 4:3
Refresh Rate : 75

Standard Timing Identification #7
Horizontal active pixels : 1280
Aspect Ratio : 5:4
Refresh Rate : 60
Detailed Timing #1
Pixel Clock (MHz) : 135
H Active (pixels) : 1280
H Blanking (pixels) : 408
V Active (lines) : 1200
V Blanking (lines) : 50
H Sync Offset (F Porch) (pixels): 248
H Sync Pulse Width (pixels) : 144
V Sync Offset (F Porch) (lines) : 46
V Sync Pulse Width (lines) : 3
H Image Size (mm) : 359
V Image Size (mm) : 287
H Border (pixels) : 0
V Border (lines) : 0
Flags : Non-interlaced
: Normal Display, No stereo
: Digital Separate sync.
: Positive Vertical Sync.
: Positive Horizontal Sync.

Monitor Descriptor #2
Serial Number : TY 123456
Monitor Descriptor #3
Monitor Name : 180P1L
Monitor Descriptor #4
Monitor Range Limits
Min. Vt rate Hz : 56
Max. Vt rate Hz : 75
Min. Horiz. rate kHz : 30
Max. Horiz. rate kHz : 82
Max. Supported Pixel : 140
No secondary GTF timing formula supported.
Extension Flag : 0
Check sum : 13 (HEX.)

```
**********************************************************************
EDID data (128 bytes)
**********************************************************************
  0: 00   1: ff   2: ff   3: ff   4: ff   5: ff   6: ff   7: 00
  8: 41   9: 0c  10: 10  11: 18  12: 56  13: 34  14: 12  15: 00
 16: 12  17: 0a  18: 01  19: 03  20: 0f  21: 24  22: 1d  23: 6e
 24: ea  25: 00  26: b2  27: a0  28: 57  29: 49  30: 9b  31: 26
 32: 10  33: 48  34: 4f  35: bf  36: ef  37: 80  38: 31  39: 59
 40: 45  41: 59  42: 61  43: 59  44: 61  45: 4f  46: 71  47: 4a
 48: 71  49: 4f  50: 81  51: 80  52: 01  53: 01  54: bc  55: 34
 56: 00  57: 98  58: 51  59: b0  60: 32  61: 40  62: f8  63: 90
 64: e3  65: 08  66: 67  67: 1f  68: 11  69: 00  70: 00  71: 1e
 72: 00  73: 00  74: 00  75: ff  76: 00  77: 20  78: 54  79: 59
 80: 20  81: 20  82: 31  83: 32  84: 33  85: 34  86: 35  87: 36
 88: 0a  89: 20  90: 00  91: 00  92: 00  93: fc  94: 00  95: 31
 96: 38  97: 30  98: 50  99: 31 100: 4c 101: 0a 102: 20 103: 20
104: 20 105: 20 106: 20 107: 20 108: 00 109: 00 110: 00 111: fd
112: 00 113: 38 114: 4b 115: 1e 116: 52 117: 0e 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 13
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DDC data of Digital

THE DISPLAY DATA CHANNEL (DDC) 1/2B CONTENT INCLUDING (FOR LG DIGITAL)

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Version : 1
Revision : 3

Basic Display Parameters/Features
Video Input Definition : Digital Video Input
Compatible with VESA DFP 1.x

Maximum H Image Size : 36
Maximum V Image Size : 29

Display Transfer Characteristic : 2.1
(gamma)

Feature Support (DPMS) : Standby
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Active Off

Display Type : RGB color display
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Red X coordinate : 0.625
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Standard Timing Identification #1
Horizontal active pixels : 640
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Refresh Rate : 85

Standard Timing Identification #2
Horizontal active pixels : 800
Aspect Ratio : 4:3
Refresh Rate : 85

Standard Timing Identification #3
Horizontal active pixels : 1024
Aspect Ratio : 4:3
Refresh Rate : 85

Standard Timing Identification #4
Horizontal active pixels : 1024
Aspect Ratio : 4:3
Refresh Rate : 75

Standard Timing Identification #5
Horizontal active pixels : 1152
Aspect Ratio : 4:3
Refresh Rate : 70

Standard Timing Identification #6
Horizontal active pixels : 1152
Aspect Ratio : 4:3
Refresh Rate : 75

Standard Timing Identification #7
Horizontal active pixels : 1280
Aspect Ratio : 5:4
Refresh Rate : 60

Detailed Timing #1
Pixel Clock (MHz) : 135
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H Sync Pulse Width (pixels) : 144
V Sync Offset (F Porch) (lines) : 46
V Sync Pulse Width (lines) : 3
H Image Size (mm) : 359
V Image Size (mm) : 287
H Border (pixels) : 0
V Border (lines) : 0
Flags : Non-interlaced
: Normal Display, No stereo
: Digital Separate sync.
: Positive Vertical Sync.
: Positive Horizontal Sync.

Monitor Descriptor #2
Serial Number : TY 123456

Monitor Descriptor #3
Monitor Name : 180P1L

Monitor Descriptor #4
Monitor Range Limits
Min. Vt rate Hz : 56
Max. Vt rate Hz : 75
Min. Horiz. rate kHz : 30
Max. Horiz. rate kHz : 82
Max. Supported Pixel : 140
No secondary GTF timing formula supported.
Extension Flag : 0
Check sum : A1 (HEX.)

```
************************************************************************
EDID data (128 bytes)
************************************************************************
  0: 00   1: ff   2: ff   3: ff   4: ff   5: ff   6: ff   7: 00
  8: 41   9: 0c  10: 10  11: 18  12: 56  13: 34  14: 12  15: 00
 16: 12  17: 0a  18: 01  19: 03  20: 81  21: 24  22: 1d  23: 6e
 24: ea  25: 00  26: b2  27: a0  28: 57  29: 49  30: 9b  31: 26
 32: 10  33: 48  34: 4f  35: bf  36: ef  37: 80  38: 31  39: 59
 40: 45  41: 59  42: 61  43: 59  44: 61  45: 4f  46: 71  47: 4a
 48: 71  49: 4f  50: 81  51: 80  52: 01  53: 01  54: bc  55: 34
 56: 00  57: 98  58: 51  59: b0  60: 32  61: 40  62: f8  63: 90
 64: e3  65: 08  66: 67  67: 1f  68: 11  69: 00  70: 00  71: 1e
 72: 00  73: 00  74: 00  75: ff  76: 00  77: 20  78: 54  79: 59
 80: 20  81: 20  82: 31  83: 32  84: 33  85: 34  86: 35  87: 36
 88: 0a  89: 20  90: 00  91: 00  92: 00  93: fc  94: 00  95: 31
 96: 38  97: 30  98: 50  99: 31 100: 4c 101: 0a 102: 20 103: 20
104: 20 105: 20 106: 20 107: 20 108: 00 109: 00 110: 00 111: fd
112: 00 113: 38 114: 4b 115: 1e 116: 52 117: 0e 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: a1
```

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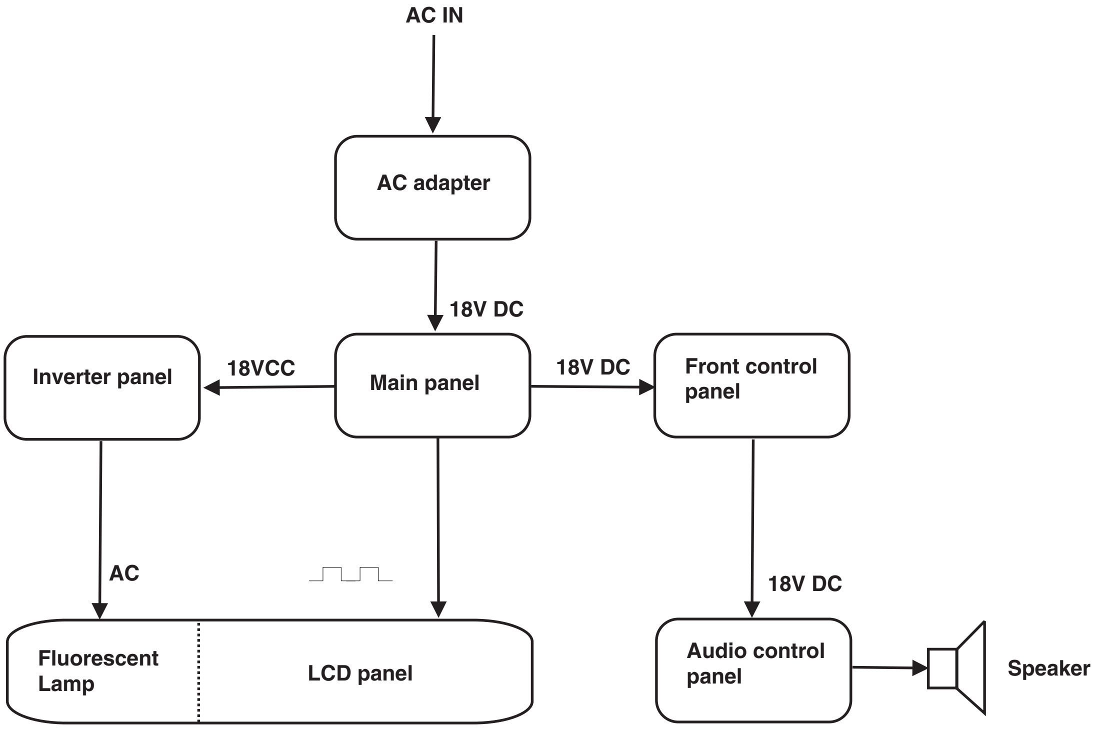
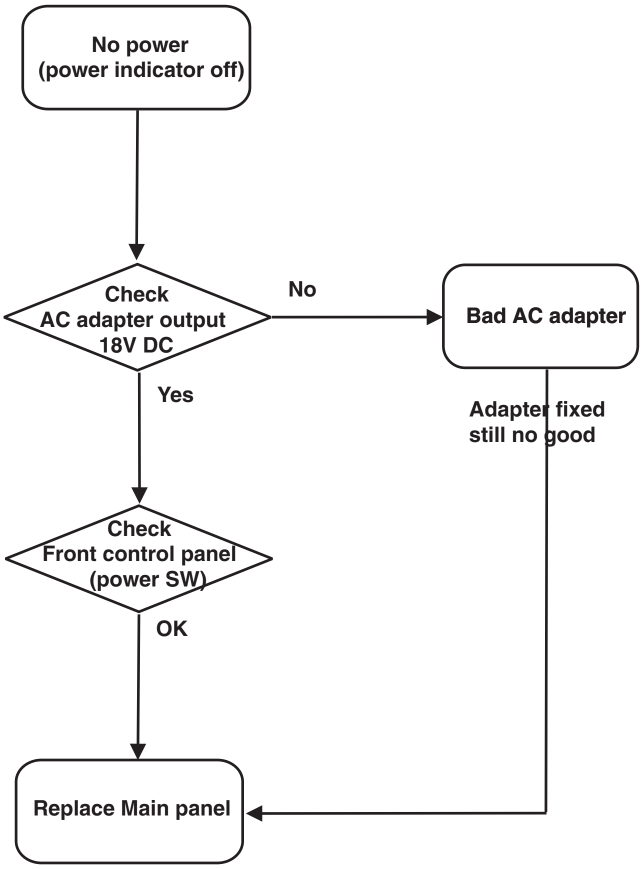
Repair Flow Chart

Block Diagram


AC IN
AC adapter
18V DC
Inverter panel
18VCC
Main panel
18V DC
Front control panel
AC
18V DC
Fluorescent Lamp
LCD panel
Audio control panel
Speaker


No power (power indicator off)
Check AC adapter output 18V DC
No
Bad AC adapter
Yes
Adapter fixed still no good
Check Front control panel (power SW)
OK
Replace Main panel

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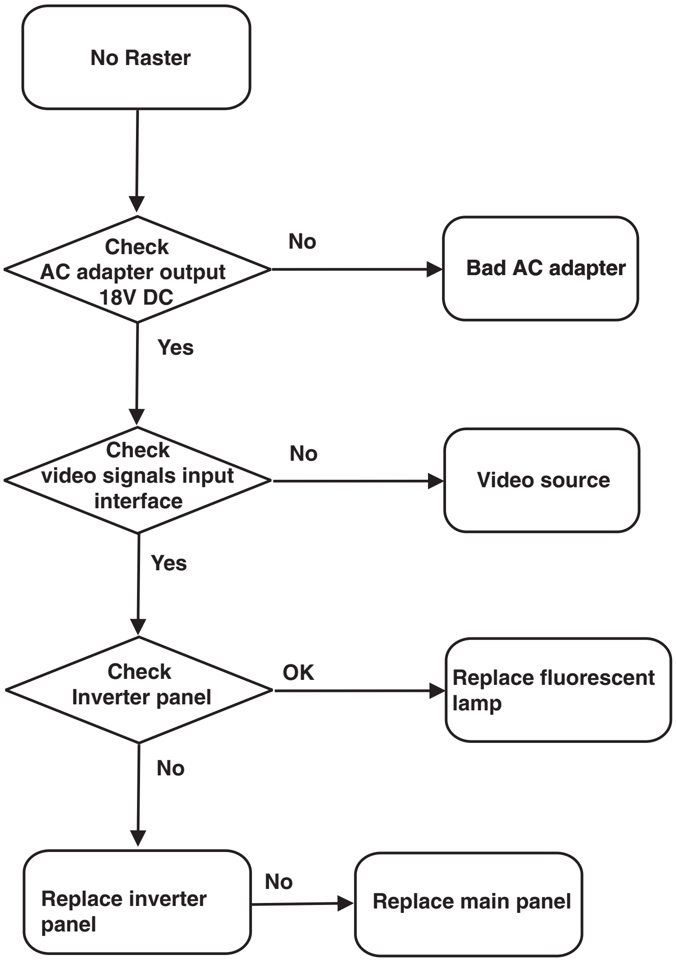
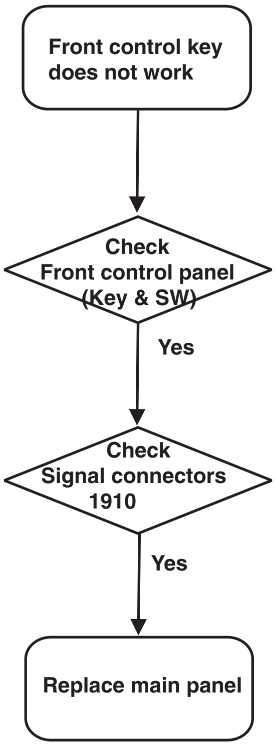
Repair Flow Chart


No Raster
Check AC adapter output 18V DC
No
Bad AC adapter
Yes
Check video signals input interface
No
Video source
Yes
Check Inverter panel
OK
Replace fluorescent lamp
No
Replace inverter panel
No
Replace main panel


Front control key does not work
Check Front control panel (Key & SW)
Yes
Check Signal connectors 1910
Yes
Replace main panel

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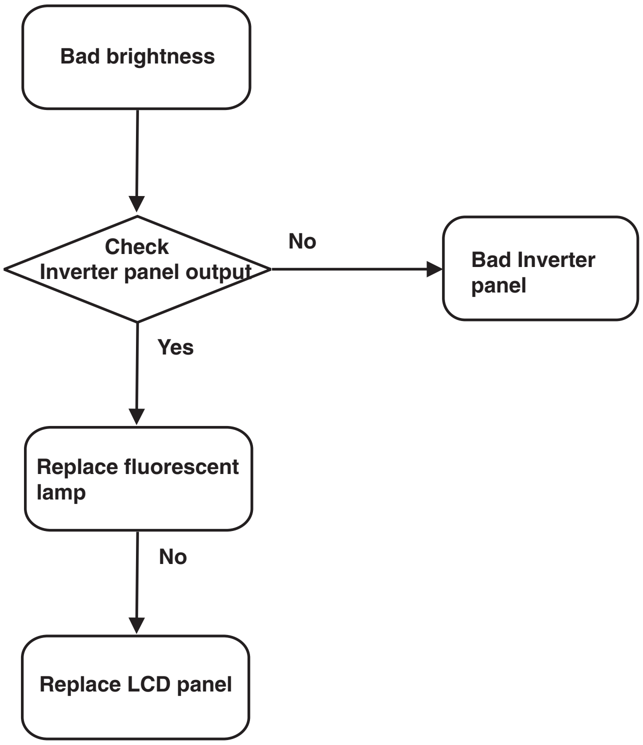
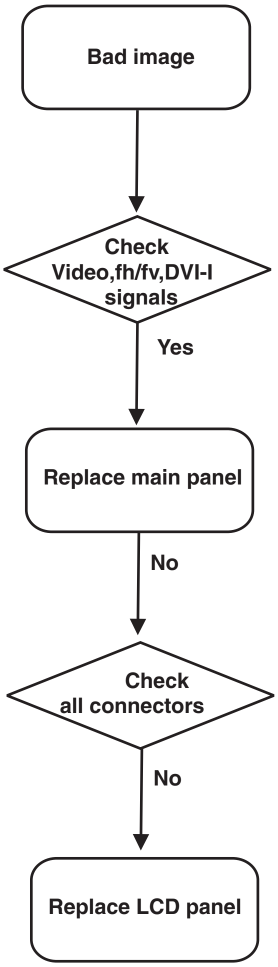
Repair Flow Chart


Bad brightness
Check
Inverter panel output
No
Bad Inverter panel
Yes
Replace fluorescent lamp
No
Replace LCD panel


Bad image
Check
Video,fh/fv,DVI-I
signals
Yes
Replace main panel
No
Check
all connectors
No
Replace LCD panel

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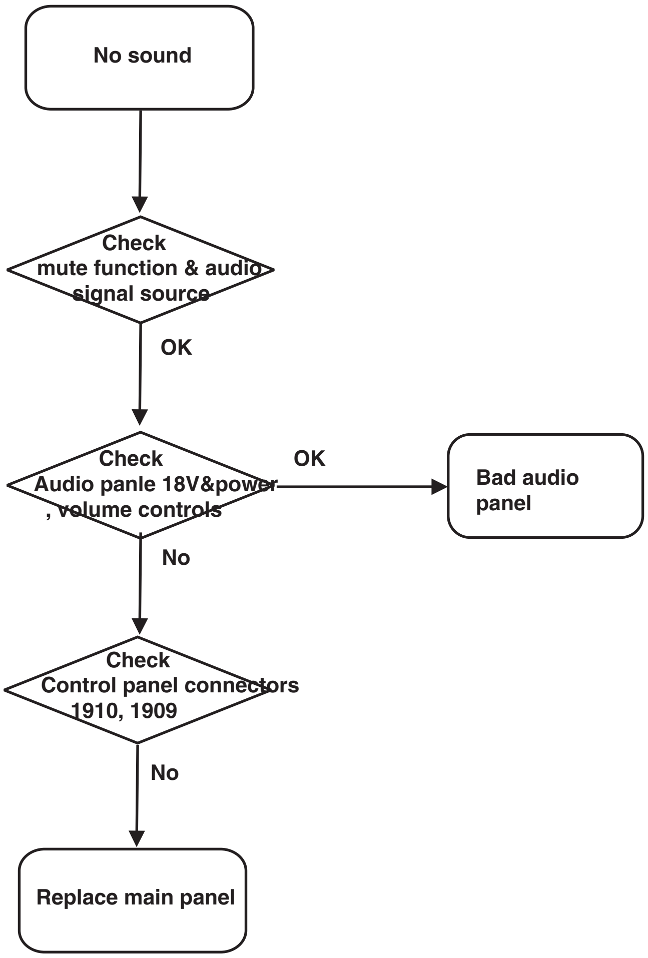
Repair Flow Chart


No sound
Check
mute function & audio
signal source
OK
Check
Audio panle 18V&power
, volume controls
OK
Bad audio
panel
No
Check
Control panel connectors
1910, 1909
No
Replace main panel

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Colour adjustment

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ZERO CALIBRATION

Zero calibration is performed to determine the output of the measuring probe when no light reaches the sensor and to set this as the zero point to which all other measurements are referenced. Zero calibration must be performed after the POWER switch has been set ON brfore taking any measurements.

To perform zero calibration :

* Before performing zero calibration, check that the measuring probe has been connected to probe connector P1.

1. Check that the POWER switch is set to ON.

2. Set the measuring/viewing selector to the (viewing) position. (An image can be seen in the viewfinder, but no light will reach the sensor.)

3. Press 0-CAL.

   * If zero calibration is being performed immediately after the POWER switch has been set to ON, press 0-CAL after "PUSH 0-CAL KEY" appears in the liquid crystal display.

4. Set the measuring/viewing selector to the position. Measurements will be started immediately.

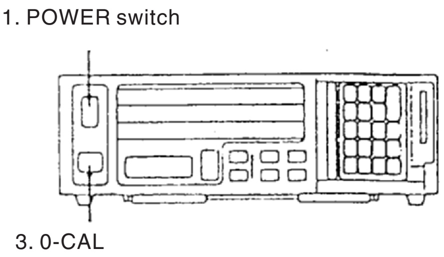
```
DARKEN PROBE
```
Display after POWER switch is set to ON

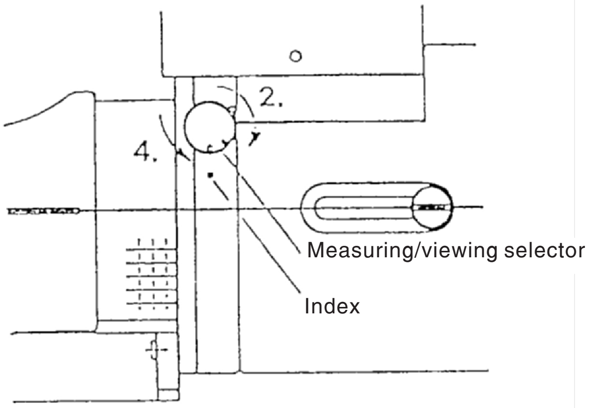
Approximately 5 seconds

```
DARKEN PROBE
PUSH 0-CAL  KEY
```

```
ZERO CALIBRATION
```
Press 0-CAL, Performing zero calibration

```
CH00            P1
E1  [            ]
```
Zero calibration completed





- "E1" will appear in the liquid crystal display the first time the CA-110 is used after shipment because no standard color has been set.
- Zero calibration can be performed at any time, even if "PUSH 0-CAL KEY" is not shown in the liquid crystal display.

Note:

- If the luminance of the LCD to be measured is 5.00cd/m² (1.46 fL) or less, wait at least five minutes after setting POWER switch to ON before performing zero calibration. Also, when measuring LCDs of low luminance, zero calibration should be performed approximately once an hour to ensure accuracy.
- If the ambient temperature changes after zero calibration has been performed, perform zero calibration again.
- Do not press any key while zero calibration is being performed. If a key is pressed, the time required for zero calibration will become longer.

To check if zero calibration was performed correctly, place the receptor area of the probe face down on a flat surface so that no light reaches the receptor area.

If the display shown at right appears in the liquid crystal display, perform zero calibration again.

```
OFFSET  ERROR
PUSH  0-CAL  KEY
```

- Even when "OFFSET ERROR" appears in the liquid crystal display, if light reaches the receptor area of the measuring probe, measured values will appear in the digital and analog displays. However, these values will not be accurate.

If any other display is shown, zero calibration was performed correctly.

Colour adjustment

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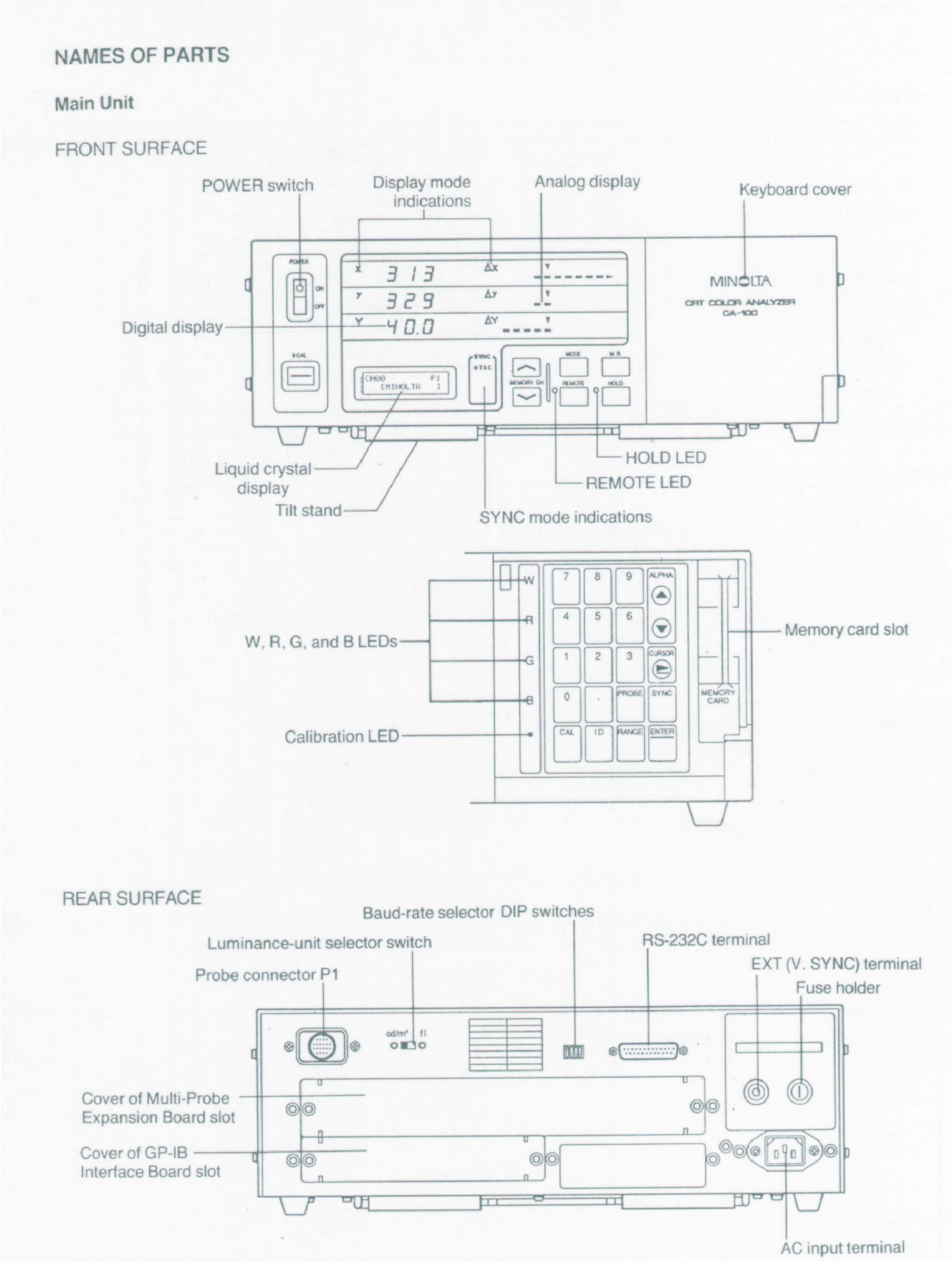
LCD COLOUR ANALYZER - CA110

1. SUMMARY

The LCD Colour Analyzer CA-110 was designed to upgrade the white-balanceprocess on production lines for colour LCD televisions and computer colour LCD panels in the colour LCD industry. The CA-110 consists of a main unit and a measuring probe.
The measuring probe utilizes an optical system suitable for measurement of colour LCDs and is equipped with a viewfinder to verify the area to be measured.

2. APPLICATIONS

- White-balance adjustment and inspection on LCD production lines.
- Quality control and shipping inspection by LCD manufacturers.
- Inspection of LCDs upon receipt by computer manufacturers.


NAMES OF PARTS
Main Unit
FRONT SURFACE
POWER switch
Display mode indications
Analog display
Keyboard cover
MINOLTA
CRT COLOR ANALYZER
CA-100
Digital display
313
329
40.0
Liquid crystal display
Tilt stand
HOLD LED
REMOTE LED
SYNC mode indications
W, R, G, and B LEDs
W
R
G
B
Calibration LED
Memory card slot
7 8 9 ALPHA
4 5 6
1 2 3 CURSOR
0 . PROBE SYNC
CAL ID RANGE ENTER
MEMORY CARD
REAR SURFACE
Baud-rate selector DIP switches
Luminance-unit selector switch
Probe connector P1
RS-232C terminal
EXT (V. SYNC) terminal
Fuse holder
Cover of Multi-Probe Expansion Board slot
Cover of GP-IB Interface Board slot
AC input terminal

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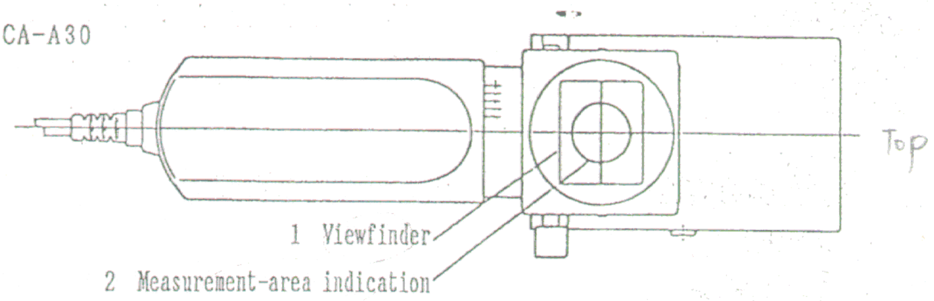
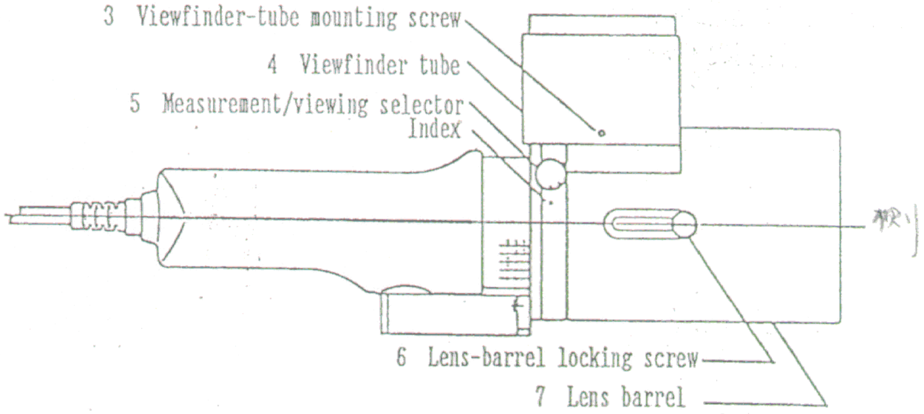
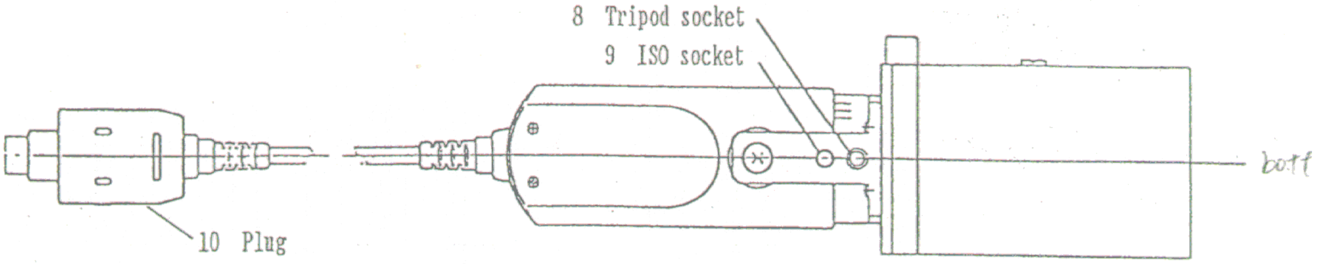
Colour Adjustment

Probe CA-A30


Top
1 Viewfinder
2 Measurement-area indication


3 Viewfinder-tube mounting screw
4 Viewfinder tube
5 Measurement/viewing selector
Index
側
6 Lens-barrel locking screw
7 Lens barrel


8 Tripod socket
9 ISO socket
bott
10 Plug

1. Viewfinder	Shows image seen by measuring probe.
2. Measurement-area indication	Indicates area to be measured.
3. Viewfinder-tube mounting screw	Removing these two screws (one on each side) allows the viewfinder tube to be removed to clean viewfinder, etc.
4. Viewfinder tube	Can be moved to minimize the effects of surrounding light and provide the best view of the viewfinder image.
5. Measurement/viewing selector	Moves internal mirror; set to ○ for measurement and to ● for viewing or for zero calibration.
6. Lens-barrel locking screw	Locks lens barrel at a fixed position.
7. Lens barrel	Can be moved back and forth to set measurement angle.
8. Tripod socket	Can be used to mount measurement probe on a tripod. Depth: 6mm.
9. ISO socket	Can be used to mount measurement probe. ISO Ø5mm, depth: 6mm
10. Plug	Used to connect measuring probe to main unit or optional Multi-Probe Expansion Board.

Colour adjustment

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ZERO CALIBRATION

Zero calibration is performed to determine the output of the measuring probe when no light reaches the sensor and to set this as the zero point to which all other measurements are referenced. Zero calibration must be performed after the POWER switch has been set ON brfore taking any measurements.

To perform zero calibration :

* Before performing zero calibration, check that the measuring probe has been connected to probe connector P1.

DARKEN PROBE

Display after POWER switch is set to ON

Approximately 5 seconds

DARKEN PROBE
PUSH 0-CAL KEY

ZERO CALIBRATION

Press 0-CAL, Performing zero calibration

CH00 P1
E1 [ ]

Zero calibration completed

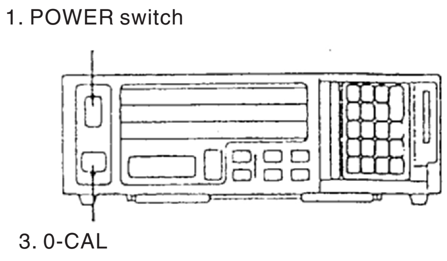
1. Check that the POWER switch is set to ON.

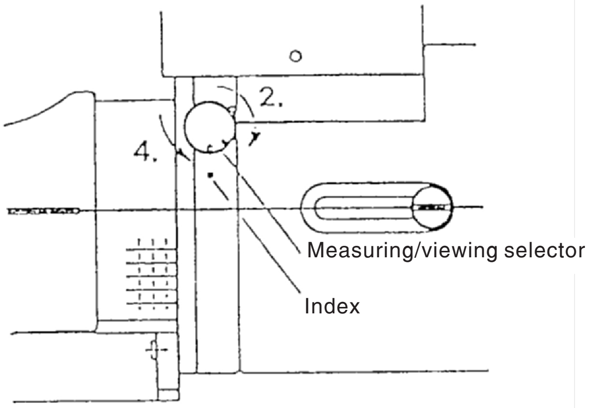
2. Set the measuring/viewing selector to the (viewing) position. (An image can be seen in the viewfinder, but no light will reach the sensor.)

3. Press 0-CAL.

   * If zero calibration is being performed immediately after the POWER switch has been set to ON, press 0-CAL after "PUSH 0-CAL KEY" appears in the liquid crystal display.

4. Set the measuring/viewing selector to the position. Measurements will be started immediately.





- "E1" will appear in the liquid crystal display the first time the CA-110 is used after shipment because no standard color has been set.
- Zero calibration can be performed at any time, even if "PUSH 0-CAL KEY" is not shown in the liquid crystal display.

Note:

- If the luminance of the LCD to be measured is 5.00cd/m² (1.46 fL) or less, wait at least five minutes after setting POWER switch to ON before performing zero calibration. Also, when measuring LCDs of low luminance, zero calibration should be performed approximately once an hour to ensure accuracy.
- If the ambient temperature changes after zero calibration has been performed, perform zero calibration again.
- Do not press any key while zero calibration is being performed. If a key is pressed, the time required for zero calibration will become longer.

To check if zero calibration was performed correctly, place the receptor area of the probe face down on a flat surface so that no light reaches the receptor area.

If the display shown at right appears in the liquid crystal display, perform zero calibration again.

OFFSET ERROR
PUSH 0-CAL KEY

- Even when "OFFSET ERROR" appears in the liquid crystal display, if light reaches the receptor area of the measuring probe, measured values will appear in the digital and analog displays. However, these values will not be accurate.

If any other display is shown, zero calibration was performed correctly.

SETTING MEASUREMENT AREA

Measurement areas of ø25mm and ø50mm can be selected by extending or retracting the lens barrel. The ø25mm measurement area can be used for measuring LCDs with 2 - inch or greater diagonals: the ø50mm measurement area can be used for measuring LCDs with 4 - inch or greater diagonals.

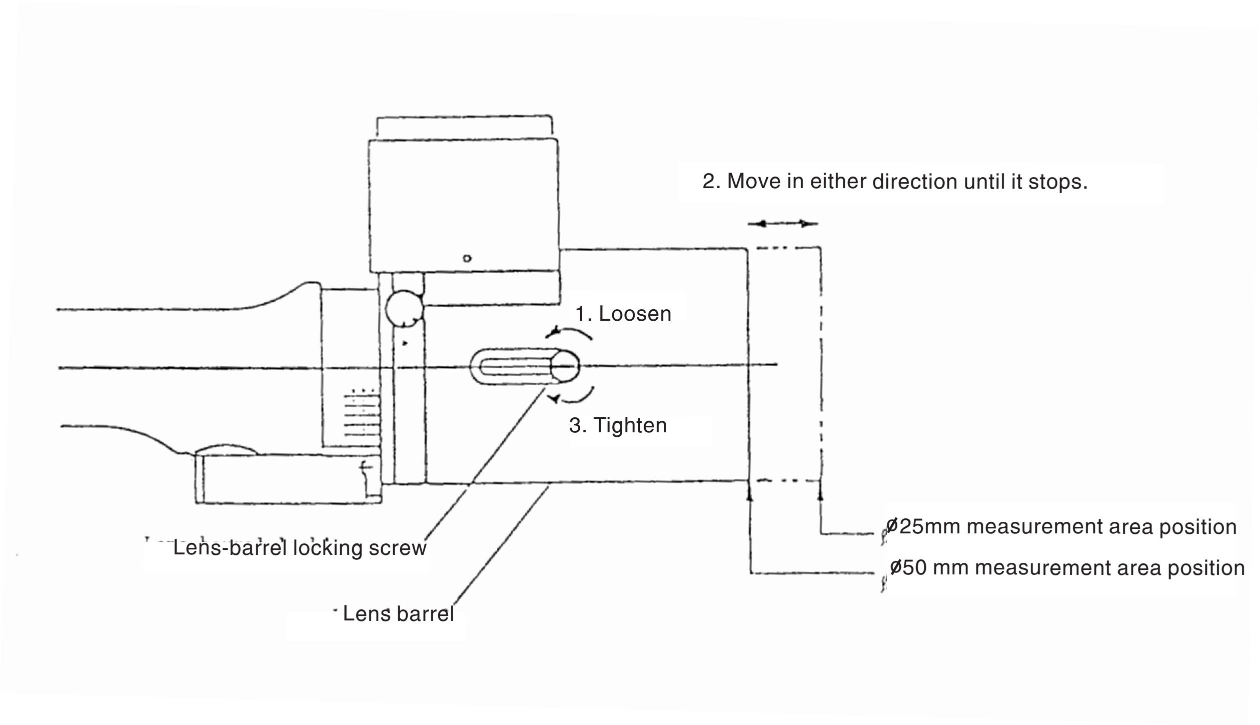
Set the measurement area :

Using a slotted screwdriver, loosen the lens - barrel locking screw.

Slide the lens barrel to the position corresponding to the desired measurement area. The lens barrel should be slid in the desired direction until it stops.
Extending the lens barrel fully sets the ø25mm measurement area: retracting the lens barrel fully sets the ø50mm measurement area.

Use the screwdriver to tighten the lens - barrel locking screw and lock the lens barrel in position.

Changing the measurement area also changes the measurement angle. this may result in differences between values measured with the ø25mm measurement area and those measured with the ø50mm measurement area to the viewing - angle characteristics of the LCD. For this reason. it is recommended that the measement area be constant for all measements.


2. Move in either direction until it stops.
1. Loosen
3. Tighten
ø25mm measurement area position
ø50 mm measurement area position
Lens-barrel locking screw
Lens barrel

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Colour adjustment

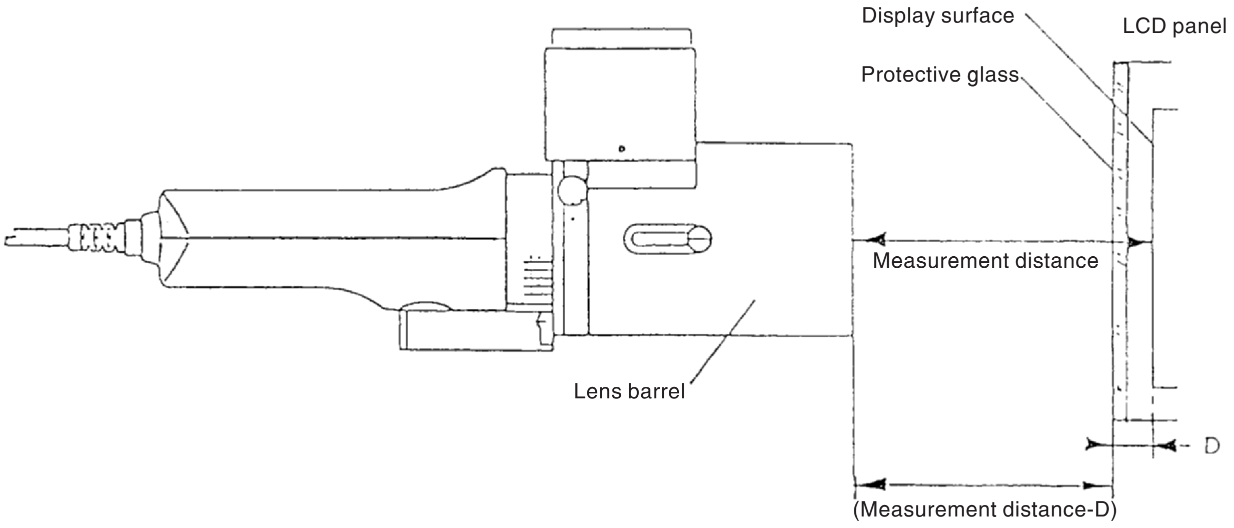
SETTING MEASUREMENT DISTANCE

The measurement distance (the distance from the front of the measuring probe's lens barrel to the display surface of the LCD) should be set using a ruler according to the procedure below.

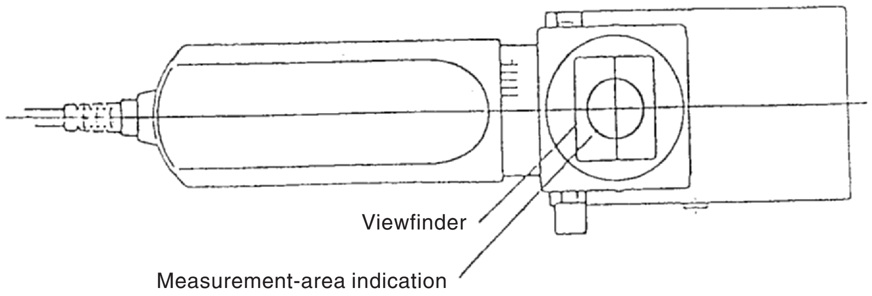
1. Mount the measuring probe on a tripod or other stand and mount the LCD on a suitable stand.
2. While using a ruler to measure the distance from the front of the measuring probe's lens barrel to the LCD's display surface, move the measuring probe or the LCD until the distance is the correct distance for the measurement area in use.

measurement area	ø 25mm	ø 50mm
measurement distance*	135mm+/-5mm	210mm+/-10mm

* Distance from the tip of the measuring probe's lens barrel to the LCD's display surface.


Display surface
LCD panel
Protective glass
Measurement distance
Lens barrel
D
(Measurement distance-D)

3. While looking through the viewfinder, move the measuring probe or LCD until the LCD section to be measured is inside the measurement-area indication in the viewfinder.


Viewfinder
Measurement-area indication

Colour Adjustment

Go to cover page

White Balance Adjustment

Alignment procedure

1. Turn on 180P LCD monitor.
2. Turn on the Timing/Pattern generator. See Fig. 1
   Setting generator to provide CROSS-Hatch pattern at
   Resolution : 1280 x 1024
   Timing : H= 80 KHz
   V= 75 Hz

3. Preset LCD colour Analyzer CA-110
   - Remove the lens protective cover of probe CA-A30.
   - Set "Measuring/viewing selector" to Measuring position for reset analyzer. (Zero calibration) as Fig. 2
   - Turn on the colour analyzer (CA-110).
   - Press "0-CAL" button to starting reset analyzer. See Fig. 3

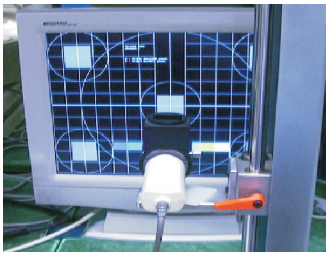


Fig. 1

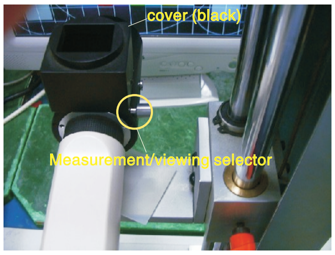


Fig. 2

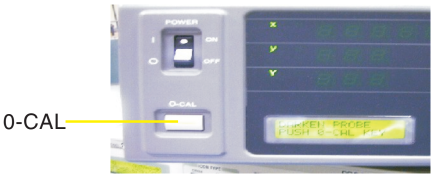
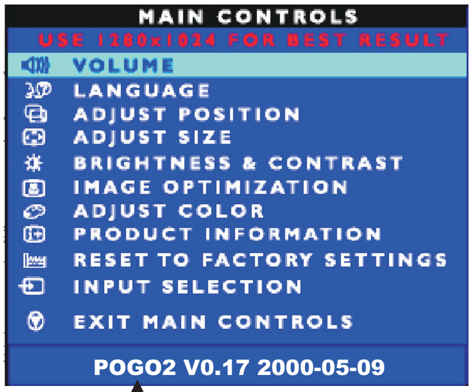


Fig. 3

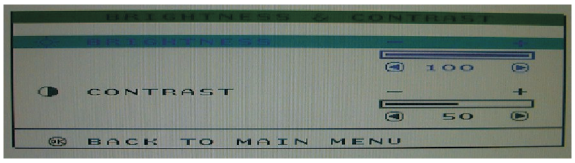
4. Entering factory adjustment mode of LCD Monitor.
   - To hold OK and AUTO buttons then power on the monitor. Press OK to bring up OSD menu for confirmation.



MAIN CONTROLS
USE 1280x1024 FOR BEST RESULT
VOLUME
LANGUAGE
ADJUST POSITION
ADJUST SIZE
BRIGHTNESS & CONTRAST
IMAGE OPTIMIZATION
ADJUST COLOR
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
POGO2 V0.17 2000-05-09

Note : after alignment, please reset OSD to user's mode for normal operation. Otherwise, the monitor won't entering power saving mode and showing full white picture all the time as no video signal supplied. To leave factory mode by restart the monitor.

5. Adjust OSD menu to lower position of screen (i.e. adjust V-position to value " 0" at submenu of OSD Setting.
6. Setting Brightness and Contrast
   - Adjust Brightness to value "100".
   - Adjust Contrast to value "50".



BRIGHTNESS & CONTRAST
BRIGHTNESS 100
CONTRAST 50
BACK TO MAIN MENU

7. Switch light probe to "Viewing" position.
8. Move the "Lens barrel" forward or backward to get clear image as shown in Fig. 4
9. Switch light probe to "Measuring" position. It should be able to indicate colour value on the CA-110.

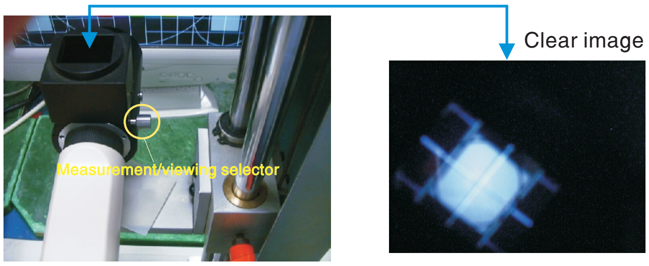
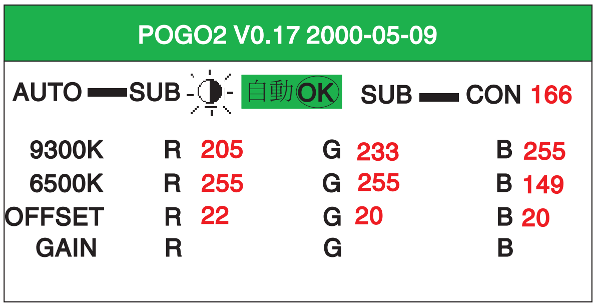


Fig. 4

10. Setting pattern to full white picture.
11. Press OK then select "POGO2 V0.17 2000-05-09" by ▼ button.
12. Press OK to bring up submenu as following windows.



POGO2 V0.17 2000-05-09

AUTO — SUB ☼ 自動OK SUB — CON 166

9300K	R 205	G 233	B 255
6500K	R 255	G 255	B 149
OFFSET	R 22	G 20	B 20
GAIN	R	G	B

9300°K

13. Press ▲ or ▼ buttons to select R G B. Increase/decrease value by press ◀ or ▶ buttons until the X, Y co-ordinates as below:

x= 0.281±0.005
y= 0.311±0.005
Y>= 155 nits

6500°K

14. Setting X, Y value listed as below:

X= 0.312±0.005
Y= 0.338±0.005
Y>= 155 nits

Alignment hits: 1. R for x value , G for y value, B for Y value on the colour analyzer.
2. If the colour analyzer has been calibrated and preset colour temperature in it. Please switch to correct setting in accordance with colour settings.

Colour adjustment

Go to cover page

15. Gray scale checking
    - Switch Timing/pattern generator to
        Pattern: 32 gray scale
        Timing: 1280 X 1024 75Hz 60KHz
    - Setting both Brightness and Contrast to 50 (Value).
    - Check black and white scale are visible clearly across the screen.
      See Fig. 1

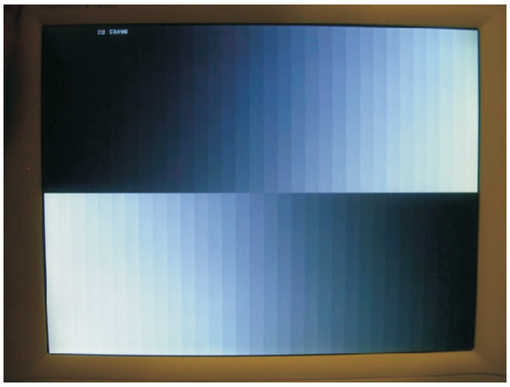
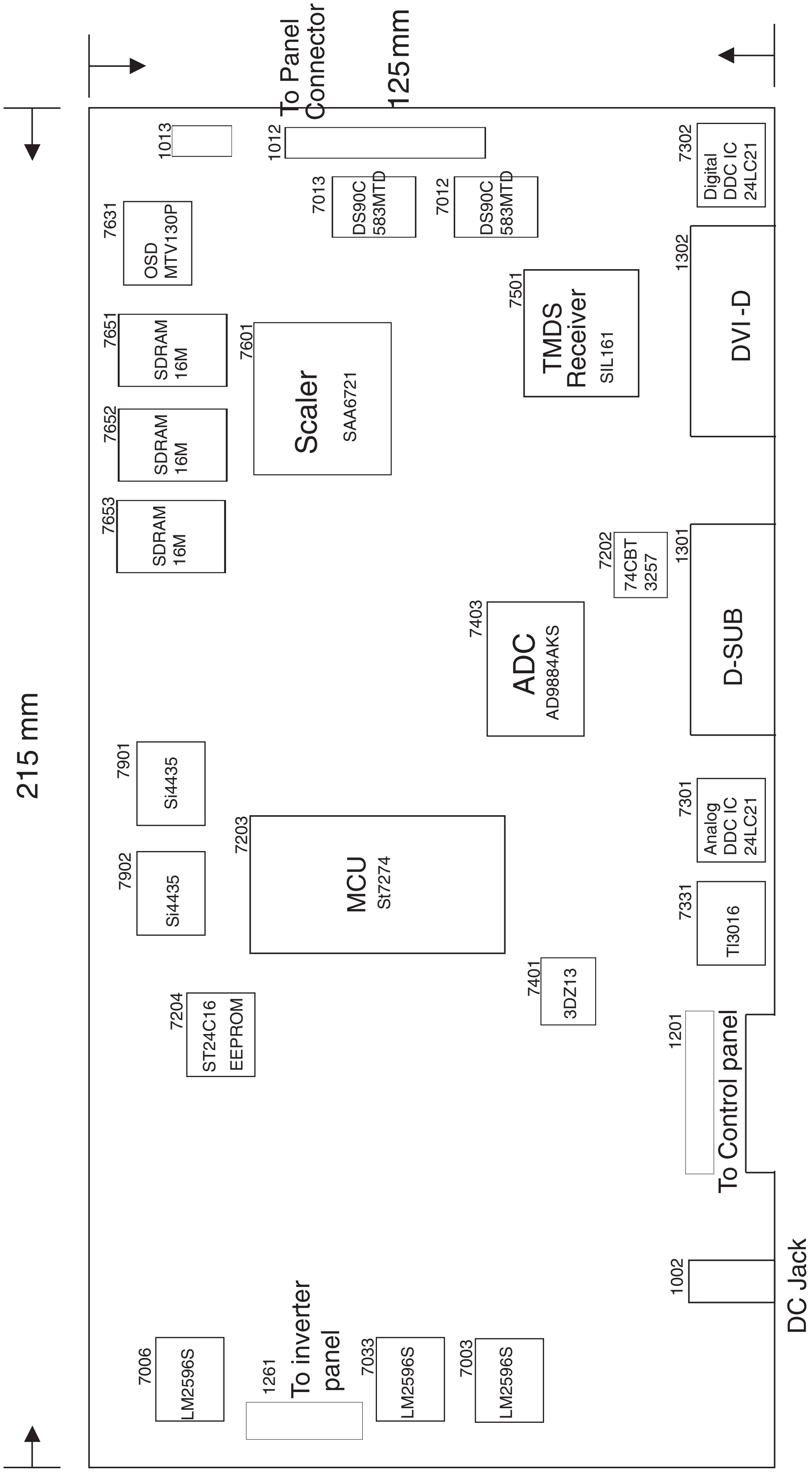


Fig. 1

Note: The bright scale will be saturated, if Y is too large. The dark scale will be invisible, if Y is too small. Re-alignment or review procedure again to correct this.

PCBA Architecture

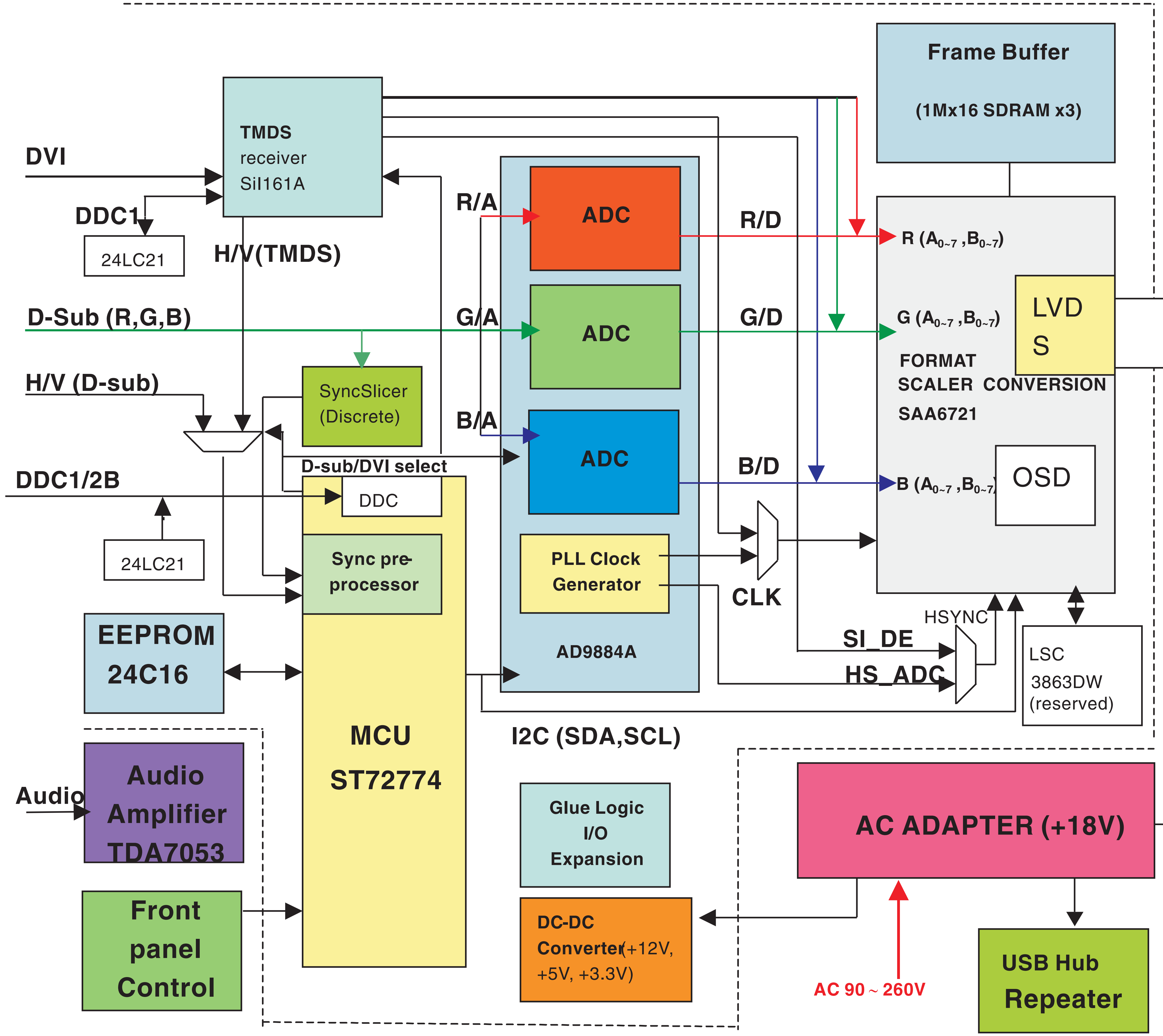
Main panel PCBA Architecture


215 mm
125 mm
To Panel Connector
1013
1012
7631
OSD MTV130P
7013
DS90C 583MTD
7012
DS90C 583MTD
7302
Digital DDC IC 24LC21
1302
DVI -D
7501
TMDS Receiver SIL161
7651
SDRAM 16M
7601
Scaler SAA6721
7652
SDRAM 16M
7653
SDRAM 16M
7202
74CBT 3257
1301
D-SUB
7403
ADC AD9884AKS
7901
Si4435
7902
Si4435
7203
MCU St7274
7301
Analog DDC IC 24LC21
7331
TI3016
7401
3DZ13
7204
ST24C16 EEPROM
1201
To Control panel
1002
DC Jack
7006
LM2596S
1261
To inverter panel
7033
LM2596S
7003
LM2596S

Back
Forward

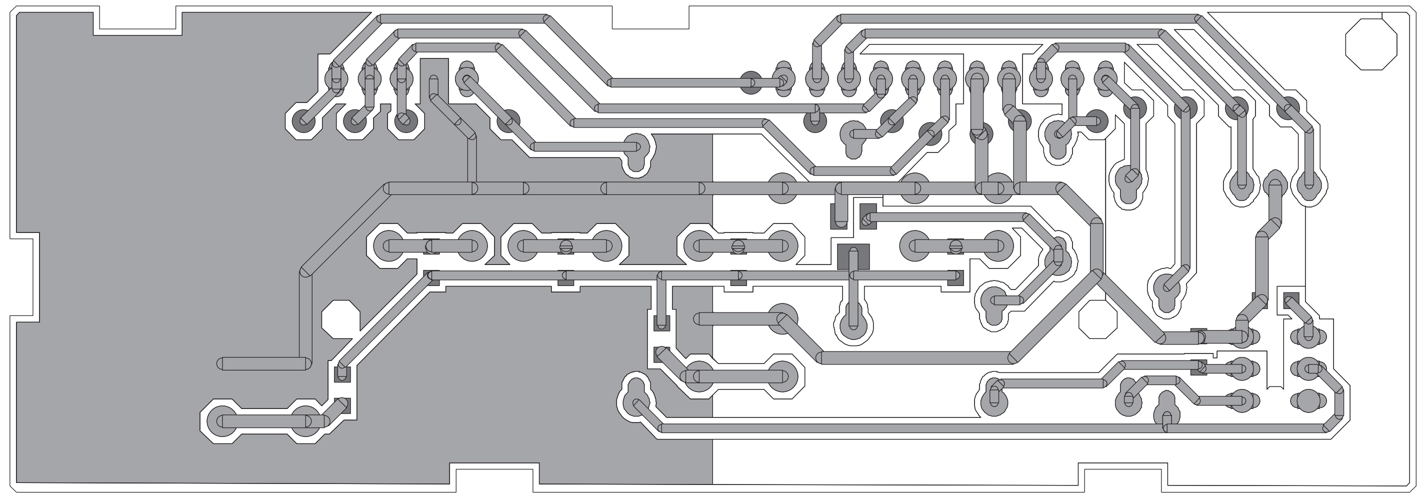
Go to cover page

Block Diagram

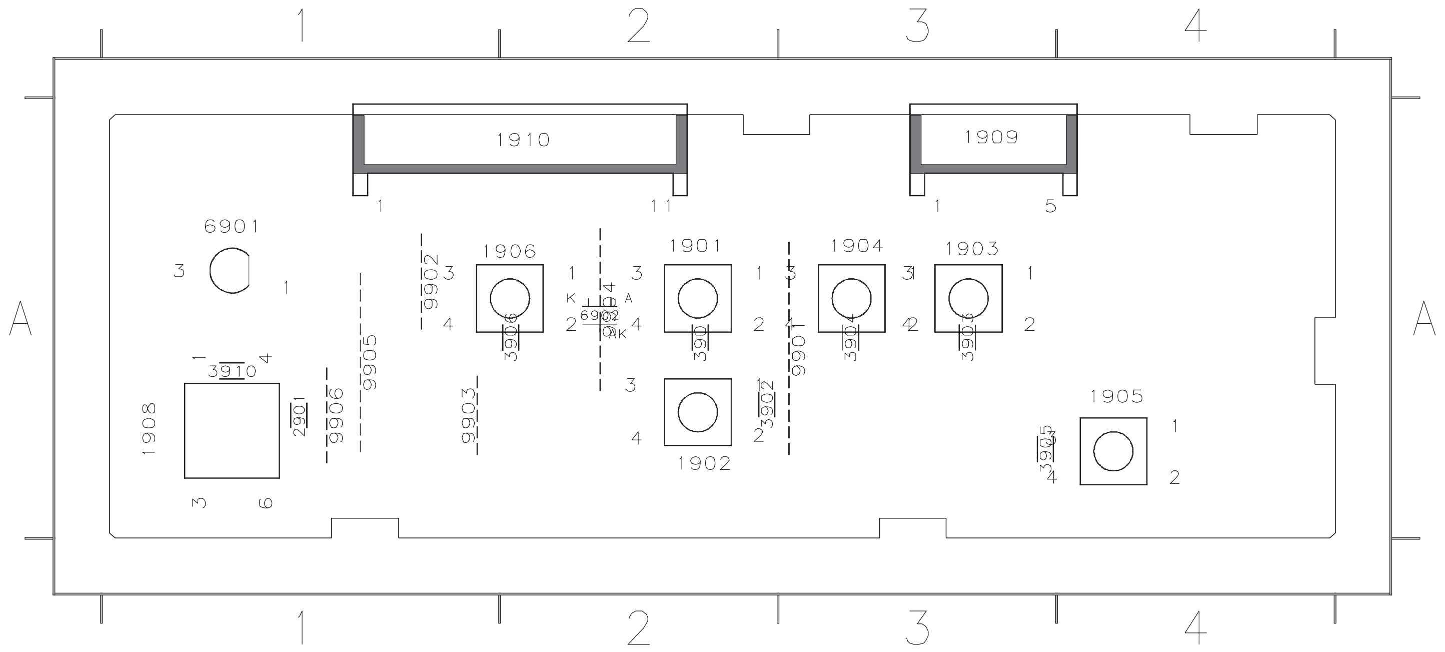

DVI
TMDS
receiver
SiI161A
DDC1
24LC21
H/V(TMDS)
D-Sub (R,G,B)
H/V (D-sub)
SyncSlicer
(Discrete)
D-sub/DVI select
DDC1/2B
DDC
24LC21
Sync pre-
processor
EEPROM
24C16
MCU
ST72774
Audio
Audio
Amplifier
TDA7053
Front
panel
Control
R/A
G/A
B/A
ADC
ADC
ADC
PLL Clock
Generator
AD9884A
R/D
G/D
B/D
CLK
Frame Buffer
(1Mx16 SDRAM x3)
R ($A_{0\sim7}$, $B_{0\sim7}$)
G ($A_{0\sim7}$, $B_{0\sim7}$)
B ($A_{0\sim7}$, $B_{0\sim7}$)
LVDS
FORMAT
SCALER CONVERSION
SAA6721
OSD
HSYNC
SI_DE
HS_ADC
LSC
3863DW
(reserved)
I2C (SDA,SCL)
Glue Logic
I/O
Expansion
DC-DC
Converter(+12V,
+5V, +3.3V)
AC ADAPTER (+18V)
AC 90 ~ 260V
USB Hub
Repeater
TFT LCD MODULE
BACK LIGHT
DC-AC INVERTER

Control Panel C.B.A.

Copper Side



Component Side


1
2
3
4
A
A
1910
1909
6901
1906
1901
1904
1903
1905
1908
3910
1902
9902
9905
9906
9903
9901
1
2
3
4

2901	A1	1910	A2	1901	A2
3901	A2	6901	A1	1902	A2
3902	A2	9901	A3	1903	A3
3903	A3	9902	A1	1904	A3
3904	A3	9903	A1	1905	A4
3905	A3	9904	A2	1906	A2
3906	A2	9905	A1	1908	A1
3910	A1	9906	A1	1909	A3
6902	A2				

Back

Forward

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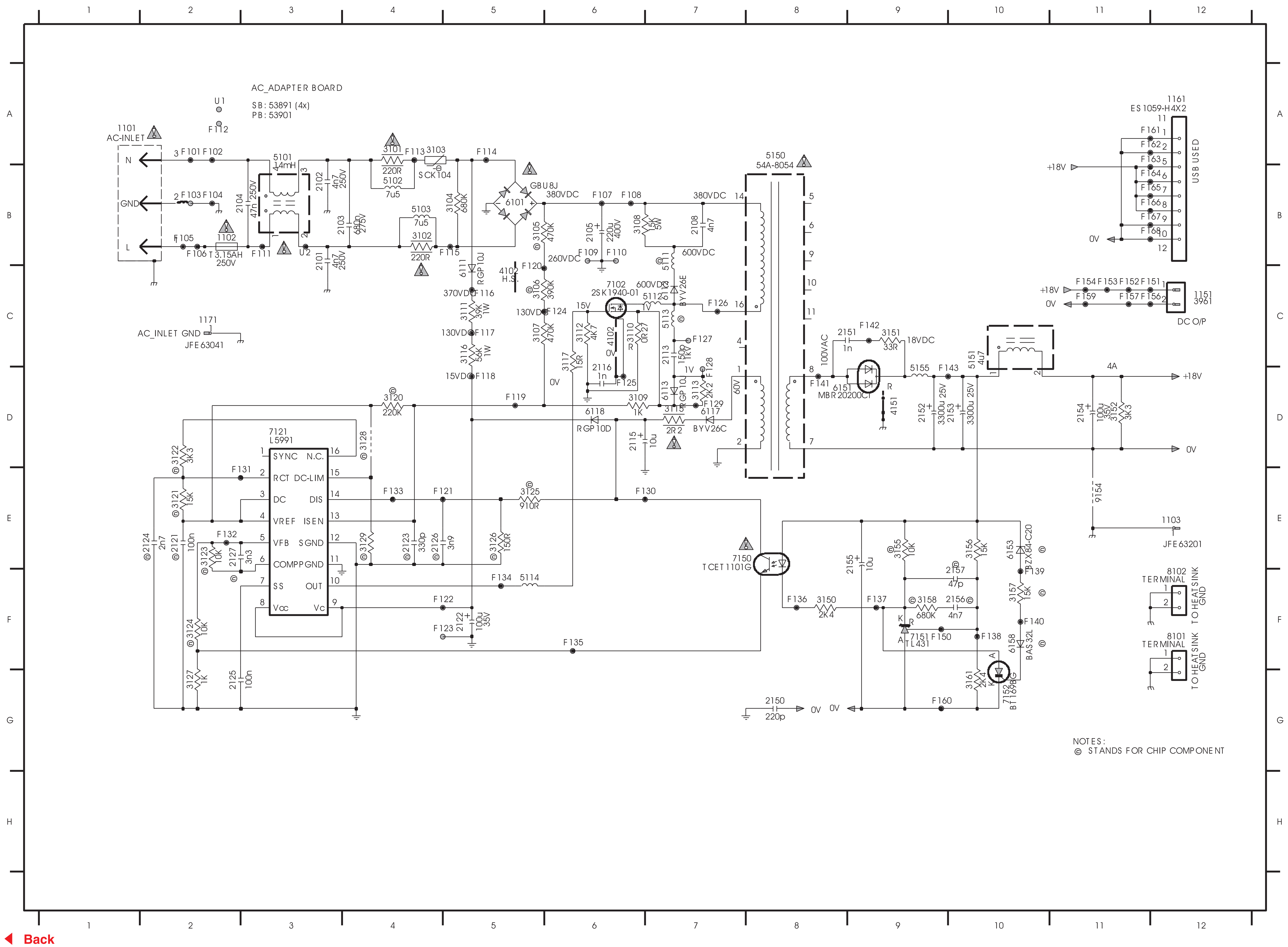
Schematic Diagram (AC adapter)

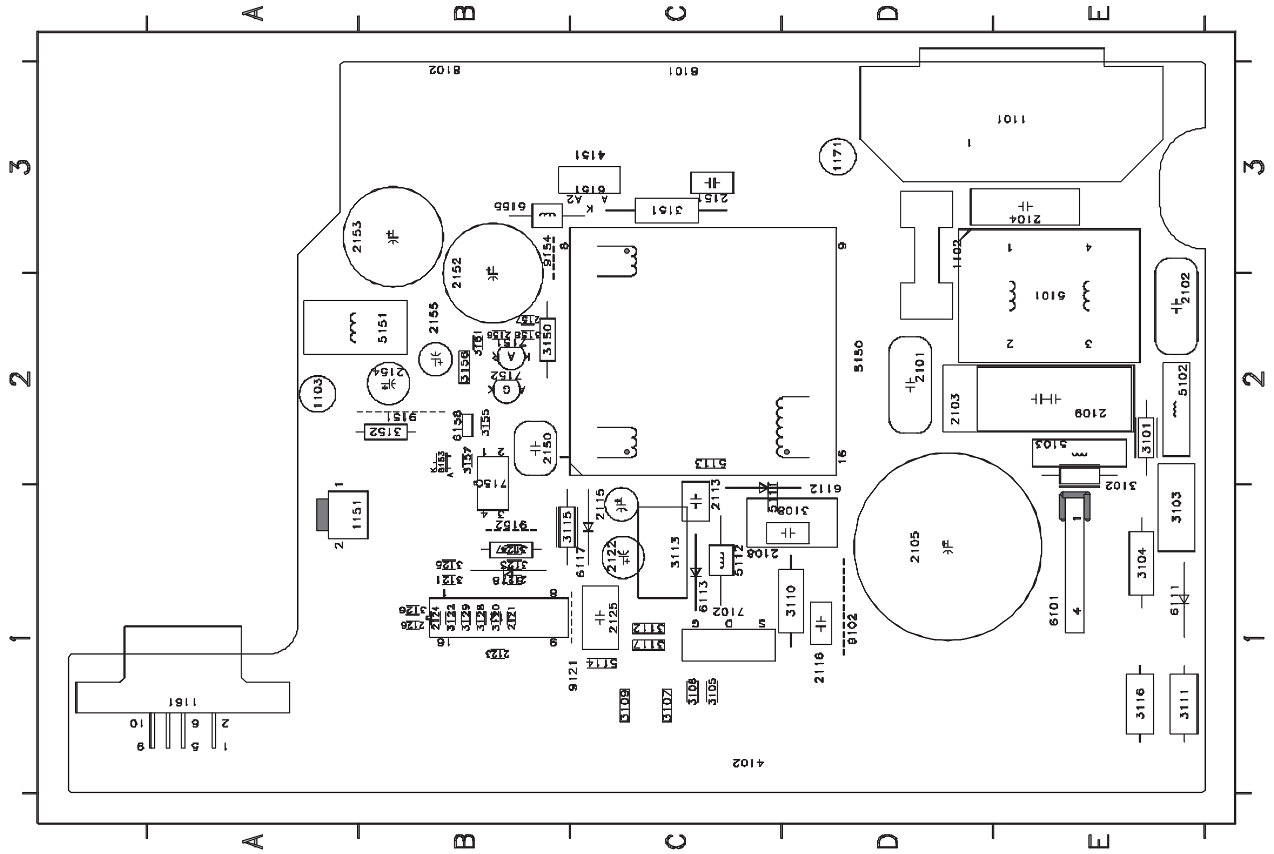

AC_ADAPTER BOARD
SB: 53891 (4x)
PB: 53901
U1
F112
1101
AC-INLET
N
GND
L
F101 F102
F103 F104
F105
F106
1102
T 3.15AH
250V
F111
5101
14mH
2104
47n
250V
2102
4n7
250V
2103
680n
275V
2101
4n7
250V
U2
3101
220R
5102
7u5
F113 3103
SCK104
5103
7u5
3102
220R
F115
F114
GBU8J
6101
3104
680K
3105
470K
380VDC
F107 F108
2105
220u
400V
3108
1K
5W
2108
4n7
380VDC
600VDC
5150
54A-8054
260VDC
F109 F110
6111
RGP10J
4102
H.S.
F120
3106
390K
7102
2SK1940-01
600VDC
5112
5111
BYV26E
F126
370VDC
F116
3111
56K
1W
130VDC
F117
3116
56K
1W
15VDC
F118
3107
470K
F124
130VDC
15V
3112
4k7
4102
0V
3110
0R27
2116
1n
F125
5113
2113
150p
1KV
F127
1V
6112
F128
3113
2R2
6117
F129
BYV26C
3115
2R2
0V
3117
15R
F119
3120
220K
6118
RGP10D
3109
1K
2115
10u
7121
L5991
SYNC
N.C.
RCT
DC-LIM
DC
DIS
VREF
ISEN
VFB
SGND
COMP
PGND
SS
OUT
Vcc
Vc
3128
3122
3K3
F131
3121
15K
2124
2n7
2121
100n
F132
3123
10K
2127
3n3
3124
10K
3127
1K
2125
100n
F133
F121
3125
910R
3129
2123
330p
2126
3n9
3126
150R
F130
F134
5114
F122
F123
2122
100u
35V
F135
7150
TCET1101G
F136
3150
2K4
F137
3158
680K
2156
4n7
2157
47p
2155
10u
3155
10K
3156
5K6
7151
TL431
F150
F138
F160
2150
220p
0V
3161
2K4
7152
BT169G
6158
BAS32L
F140
3157
15K
6153
BZX84-C20
F139
60V
100VAC
2151
1n
F142
3151
33R
18VDC
F141
6151
MBR20200CT
4151
5155
F143
2152
3300u 25V
2153
3300u 25V
5151
4u7
4A
+18V
0V
2154
10u
35V
3152
3K3
9154
1103
JFE63201
1161
ES1059-H4X2
F161
F162
F163
F164
F165
F166
F167
F168
+18V
0V
USB USED
F154 F153 F152 F151
F159
F157 F156
1151
3961
DC O/P
8102
TERMINAL
TO HEATSINK
GND
8101
TERMINAL
TO HEATSINK
GND
1171
AC_INLET GND
JFE63041
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
11
12

NOTES:
⊚ STANDS FOR CHIP COMPONENT

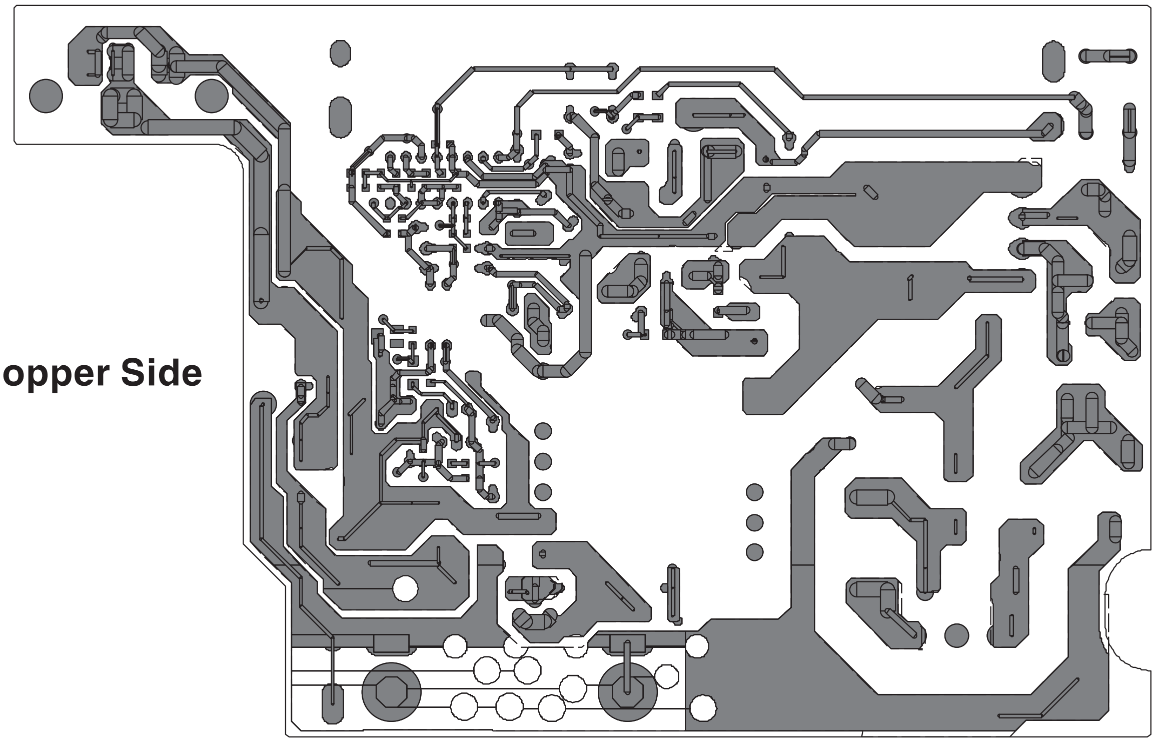
1101	A1
1102	B2
1103	E12
1151	C12
1161	A12
1171	C2
2101	B3
2102	B3
2103	B4
2104	B3
2105	B6
2108	B7
2113	C7
2115	D6
2116	C6
2121	E2
2122	F5
2123	E4
2124	E2
2125	G2
2126	E4
2127	E2
2150	G8
2151	C8
2152	D9
2153	D10
2154	D11
2155	E9
2156	F10
2157	F10
2158	E11
2159	E11
3101	A4
3102	B4
3103	A4
3104	B5
3105	B5
3106	C5
3107	C5
3108	B6
3109	D6
3110	C6
3111	C5
3112	C6
3113	D7
3115	D7
3116	C5
3117	C6
3120	D4
3121	E2
3122	D2
3123	E2
3124	F2
3125	E5
3126	E5
3127	G2
3128	D4
3129	E4
3150	F8
3151	C9
3152	D11
3155	E9
3156	E10
3157	F10
3158	F9
3161	G10
4102	C6
4151	D9
5101	B3
5102	B4
5103	B4
5111	B7
5112	C7
5113	C7
5114	F5
5150	A8
5151	D10
5155	D9
6101	B5
6111	C5
6112	C7
6113	D7
6117	D7
6118	D6
6151	D8
6153	E10
6158	F10
7102	C6
7121	D3
7150	E8
7151	F9
7152	G10
8101	F12
8102	F12
9153	E11
F101	A2
F102	A2
F103	B2
F104	B2
F105	B2
F106	B2
F107	B6
F108	B6
F109	B6
F110	B6
F121	E5
F122	F5
F123	F5
F150	F9
F151	C12
F152	C11
F153	C11
F154	C11
F156	C12
F157	C11
F158	C11
F159	C11
F160	G9
F161	A12
F162	A12
F163	A12
F164	B12
F165	B12
F166	B12
F167	B12
F168	B12

C.B.A for AC adapter

Component Side


A
B
C
D
E
1
2
3
1101
1102
1151
4102
4151
2153
2152
2105
2109
2104
5150
6101
3101
3102
3103
3104
8101
8102

Copper Side



6111 E1	6112 D1	6113 C1	6117 C1
6118 B1	6151 C3	7102 C1	7121 B1
7150 B2	7151 B2	7152 B2	8101 C3
8102 B3	9102 D1	9121 C1	9151 B2
9152 B1	9154 B3	1171 D3	2101 D2
2102 E2	2103 D2	2104 E3	2105 D1
2108 C1	2109 E2	2113 C1	2115 C1
2116 D1	2122 C1	2125 C1	2150 B2
2151 C3	2152 B2		

2121 B1	2123 B1	2124 B1	2126 B1
2127 B1	2156 B2	2157 B2	3105 C1
3106 C1	3120 B1	3121 B1	3122 B1
3123 B1	3124 B1	3125 B1	3126 B1
3128 B1	3129 B1	3155 B2	3157 B2
3158 B2	3161 B2	5111 C1	5113 C2
5114 C1	6153 B2	6158 B2	1101 E3
1102 D3	1103 A2	1151 A1	1161 A1

2153 A3	2154 B2	2155 B2	3101 E2
3102 E1	3103 E1	3104 E1	3107 C1
3108 D1	3109 C1	3110 D1	3111 E1
3112 C1	3113 C1	3115 B1	3116 E1
3117 C1	3127 B1	3150 B2	3151 C3
3152 B2	3156 B2	4102 C1	4151 C3
5101 E2	5102 E2	5103 E2	5112 C1
5150 D2	5151 B2	5155 B3	6101 E1

Back

Forward

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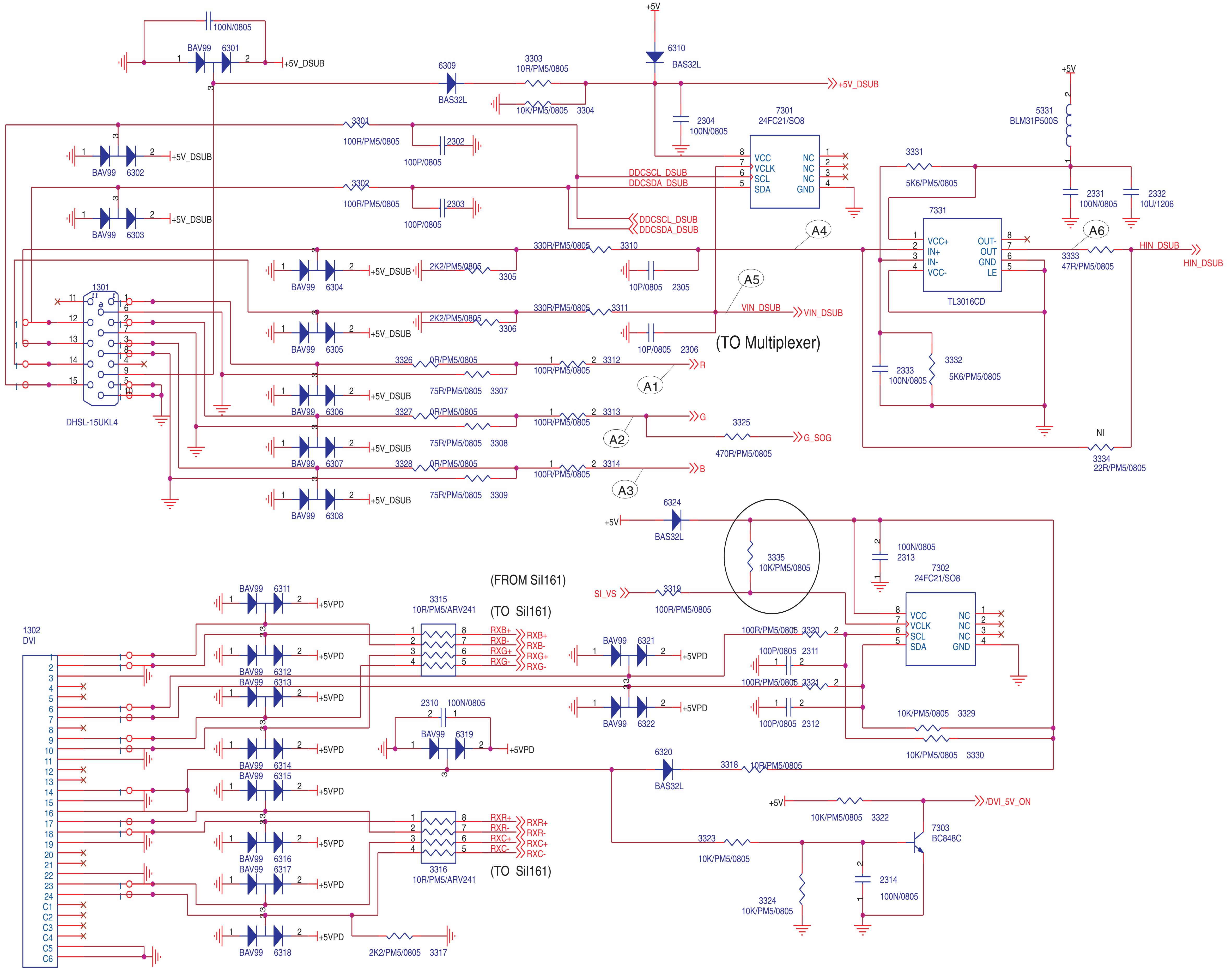
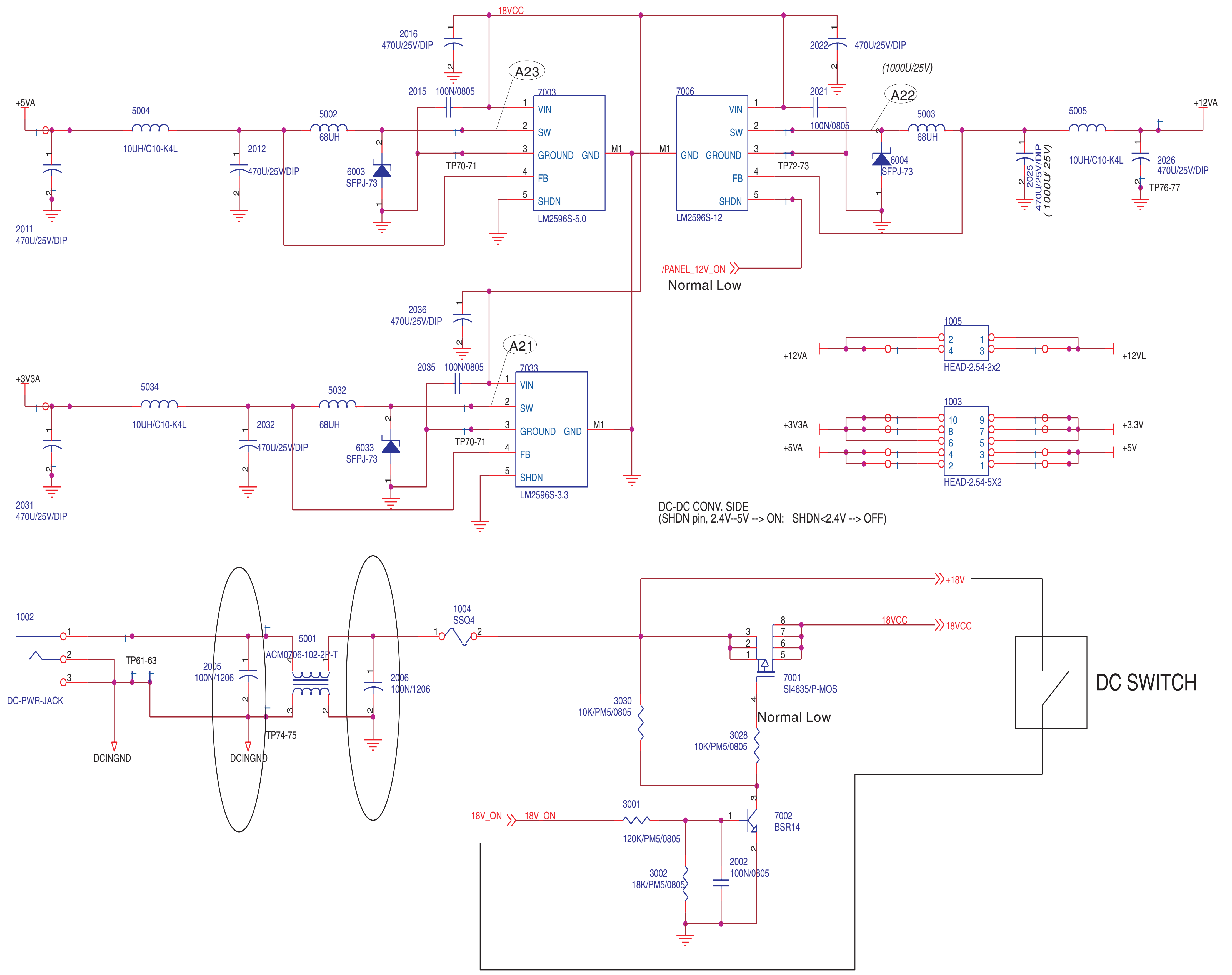
Schematic Diagram (Video in)



+5V
6310
BAS32L
6309
BAS32L
3303
10R/PM5/0805
3304
10K/PM5/0805
+5V_DSUB
100N/0805
BAV99
6301
6302
6303
6304
6305
6306
6307
6308
2304
100N/0805
7301
24FC21/SO8
VCC
VCLK
SCL
SDA
NC
GND
3301
100R/PM5/0805
2302
100P/0805
3302
2303
DDCSCL_DSUB
DDCSDA_DSUB
+5V
5331
BLM31P500S
3331
5K6/PM5/0805
2331
100N/0805
2332
10U/1206
7331
VCC+
IN+
IN-
VCC-
OUT-
OUT
GND
LE
TL3016CD
A4
A5
A6
A1
A2
A3
3333
47R/PM5/0805
HIN_DSUB
330R/PM5/0805
3310
3311
2K2/PM5/0805
3305
3306
10P/0805
2305
2306
VIN_DSUB
(TO Multiplexer)
1301
DHSL-15UKL4
3326
0R/PM5/0805
3312
100R/PM5/0805
75R/PM5/0805
3307
3327
3313
3308
3328
3314
3309
R
G
B
3325
470R/PM5/0805
G_SOG
2333
100N/0805
3332
5K6/PM5/0805
NI
3334
22R/PM5/0805
6324
BAS32L
+5V
3335
10K/PM5/0805
100N/0805
2313
7302
24FC21/SO8
(FROM Sil161)
SI_VS
3319
100R/PM5/0805
(TO Sil161)
1302
DVI
BAV99
6311
6312
6313
6314
6315
6316
6317
6318
6319
6320
6321
6322
+5VPD
3315
10R/PM5/ARV241
RXB+
RXB-
RXG+
RXG-
RXR+
RXR-
RXC+
RXC-
3316
10R/PM5/ARV241
2310
100N/0805
3320
3321
2311
2312
100P/0805
3329
3330
10K/PM5/0805
3318
10R/PM5/0805
3322
/DVI_5V_ON
3323
7303
BC848C
2314
100N/0805
3324
10K/PM5/0805
3317
2K2/PM5/0805

Schematic Diagram (DC to DC converter)



18VCC
2016
470U/25V/DIP
2022
470U/25V/DIP
(1000U/25V)
A23
A22
A21
+5VA
5004
10UH/C10-K4L
5002
68UH
2012
470U/25V/DIP
2015
100N/0805
6003
SFPJ-73
TP70-71
7003
VIN
SW
GROUND
GND
FB
SHDN
LM2596S-5.0
M1
7006
LM2596S-12
2021
100N/0805
5003
68UH
6004
SFPJ-73
TP72-73
5005
10UH/C10-K4L
+12VA
2025
470U/25V/DIP
(1000U 25V)
2026
470U/25V/DIP
TP76-77
2011
470U/25V/DIP
/PANEL_12V_ON
Normal Low
2036
470U/25V/DIP
2035
100N/0805
+3V3A
5034
10UH/C10-K4L
5032
68UH
2032
470U/25V/DIP
6033
SFPJ-73
7033
LM2596S-3.3
2031
470U/25V/DIP
1005
HEAD-2.54-2x2
+12VA
+12VL
1003
HEAD-2.54-5X2
+3V3A
+3.3V
+5VA
+5V
DC-DC CONV. SIDE
(SHDN pin, 2.4V--5V --> ON; SHDN<2.4V --> OFF)
1002
DC-PWR-JACK
TP61-63
DCINGND
2005
100N/1206
5001
ACM0706-102-2P-T
TP74-75
2006
100N/1206
1004
SSQ4
+18V
18VCC
DC SWITCH
7001
SI4835/P-MOS
Normal Low
3030
10K/PM5/0805
3028
10K/PM5/0805
18V_ON
3001
120K/PM5/0805
7002
BSR14
3002
18K/PM5/0805
2002
100N/0805

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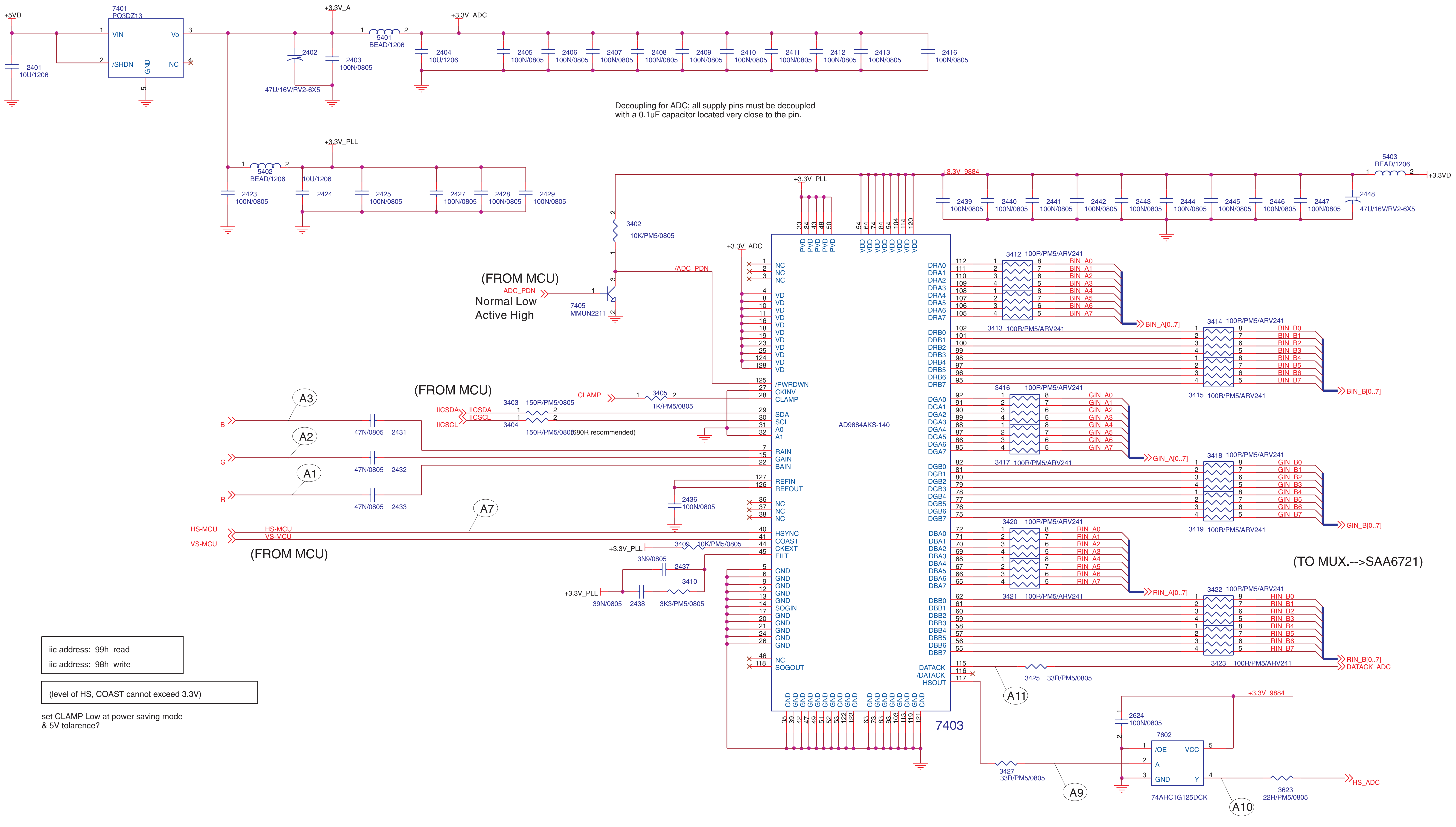
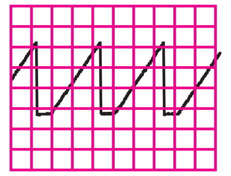
Schematic Diagram (RGB Digitizer)


+5VD
7401
PQ3DZ13
VIN
Vo
/SHDN
GND
NC
2401
10U/1206
+3.3V_A
2402
47U/16V/RV2-6X5
2403
100N/0805
5401
BEAD/1206
+3.3V_ADC
2404
10U/1206
2405 100N/0805
2406 100N/0805
2407 100N/0805
2408 100N/0805
2409 100N/0805
2410 100N/0805
2411 100N/0805
2412 100N/0805
2413 100N/0805
2416 100N/0805
Decoupling for ADC; all supply pins must be decoupled
with a 0.1uF capacitor located very close to the pin.
+3.3V_PLL
5402
BEAD/1206
10U/1206
2423 100N/0805
2424
2425 100N/0805
2427 100N/0805
2428 100N/0805
2429 100N/0805
+3.3V_9884
5403
BEAD/1206
+3.3VD
2439 100N/0805
2440 100N/0805
2441 100N/0805
2442 100N/0805
2443 100N/0805
2444 100N/0805
2445 100N/0805
2446 100N/0805
2447 100N/0805
2448
47U/16V/RV2-6X5
3402
10K/PM5/0805
(FROM MCU)
ADC_PDN
Normal Low
Active High
7405
MMUN2211
/ADC_PDN
PVD
VDD
NC
VD
/PWRDWN
CKINV
CLAMP
SDA
SCL
A0
A1
RAIN
GAIN
BAIN
REFIN
REFOUT
HSYNC
COAST
CKEXT
FILT
GND
SOGIN
SOGOUT
AD9884AKS-140
7403
DRA0 DRA1 DRA2 DRA3 DRA4 DRA5 DRA6 DRA7
DRB0 DRB1 DRB2 DRB3 DRB4 DRB5 DRB6 DRB7
DGA0 DGA1 DGA2 DGA3 DGA4 DGA5 DGA6 DGA7
DGB0 DGB1 DGB2 DGB3 DGB4 DGB5 DGB6 DGB7
DBA0 DBA1 DBA2 DBA3 DBA4 DBA5 DBA6 DBA7
DBB0 DBB1 DBB2 DBB3 DBB4 DBB5 DBB6 DBB7
DATACK
/DATACK
HSOUT
3412 100R/PM5/ARV241
3413 100R/PM5/ARV241
3414 100R/PM5/ARV241
3415 100R/PM5/ARV241
3416 100R/PM5/ARV241
3417 100R/PM5/ARV241
3418 100R/PM5/ARV241
3419 100R/PM5/ARV241
3420 100R/PM5/ARV241
3421 100R/PM5/ARV241
3422 100R/PM5/ARV241
3423 100R/PM5/ARV241
BIN_A0 … BIN_A7
BIN_A[0..7]
BIN_B0 … BIN_B7
BIN_B[0..7]
GIN_A0 … GIN_A7
GIN_A[0..7]
GIN_B0 … GIN_B7
GIN_B[0..7]
RIN_A0 … RIN_A7
RIN_A[0..7]
RIN_B0 … RIN_B7
RIN_B[0..7]
DATACK_ADC
(TO MUX.-->SAA6721)
(FROM MCU)
CLAMP
3405
1K/PM5/0805
3403 150R/PM5/0805
IICSDA
IICSCL
3404 150R/PM5/0805(680R recommended)
A3
A2
A1
A7
B
G
R
47N/0805 2431
47N/0805 2432
47N/0805 2433
2436
100N/0805
HS-MCU
VS-MCU
(FROM MCU)
+3.3V_PLL
3409 10K/PM5/0805
3N9/0805
2437
3410
39N/0805 2438 3K3/PM5/0805
3425 33R/PM5/0805
A11
2624
100N/0805
7602
/OE
VCC
A
GND
Y
74AHC1G125DCK
3427
33R/PM5/0805
A9
3623
22R/PM5/0805
A10
HS_ADC
iic address: 99h read
iic address: 98h write
(level of HS, COAST cannot exceed 3.3V)
set CLAMP Low at power saving mode
& 5V tolarence?

Waveforms

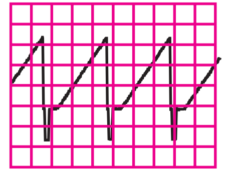
Waveforms for RGB Digitizer

A1 3312



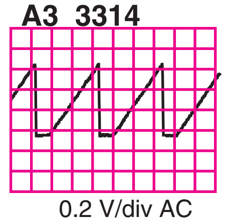
0.2 V/div AC
5 uS/div

A2 3313



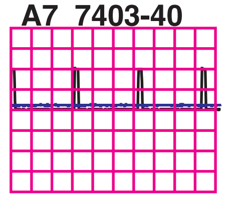
0.2 V/div AC
5 uS/div

A3 3314



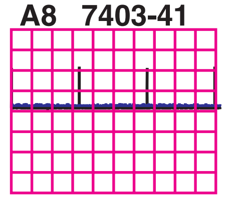
0.2 V/div AC
5 uS/div

A7 7403-40



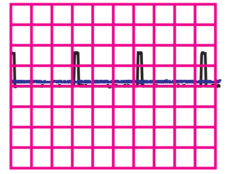
2 V/div AC
5 uS/div

A8 7403-41



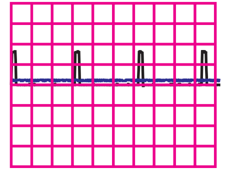
2 V/div AC
8 uS/div

A9 7602-2



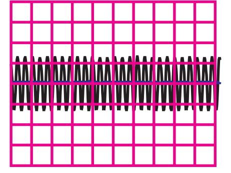
2 V/div AC
5 uS/div

A10 7602-4



2 V/div AC
5 uS/div

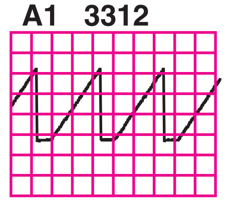
A11 7403-115



2 V/div AC
50 nS/div

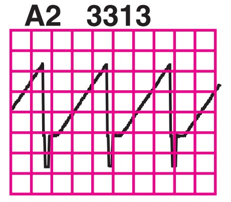
Waveforms for Video in and DC to DC converter

A1 3312



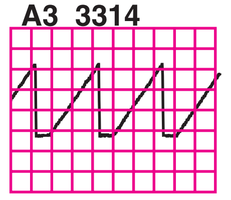
0.2 V/div AC
5 uS/div

A2 3313



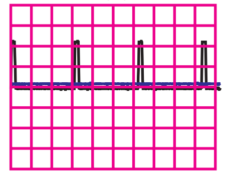
0.2 V/div AC
5 uS/div

A3 3314



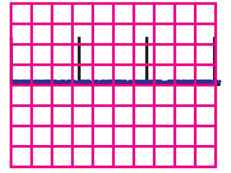
0.2 V/div AC
5 uS/div

A4 7331-2



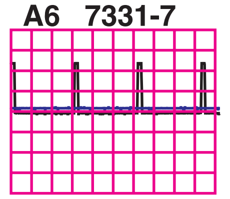
2 V/div AC
5 uS/div

A5 3311



2 V/div AC
2 uS/div

A6 7331-7



2 V/div AC
5 uS/div

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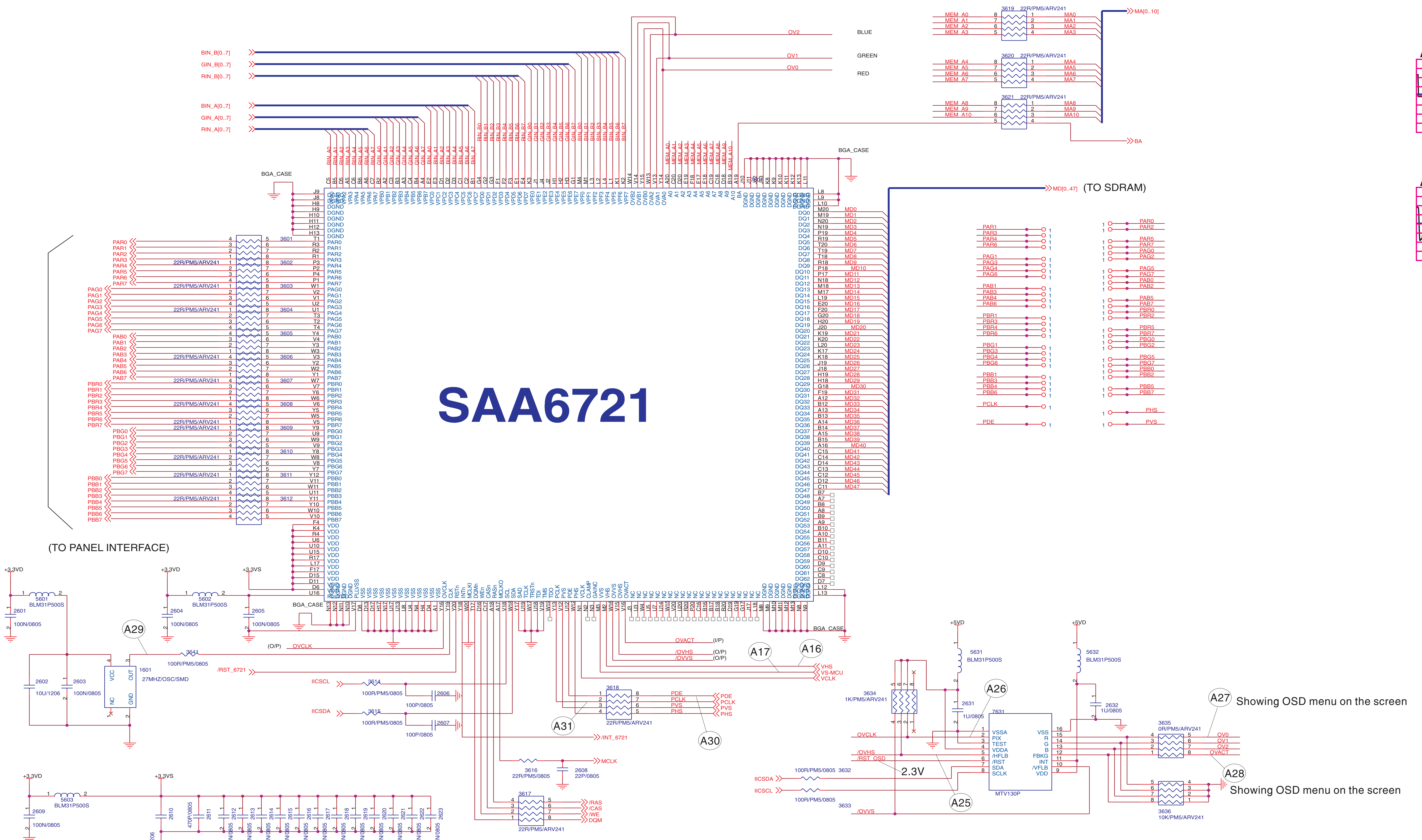
Schematic Diagram (Scaling)

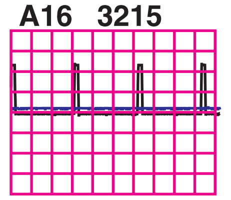

SAA6721
(TO PANEL INTERFACE)
(TO SDRAM)
BLUE
GREEN
RED
OV2
OV1
OV0
BIN_B[0..7]
GIN_B[0..7]
RIN_B[0..7]
BIN_A[0..7]
GIN_A[0..7]
RIN_A[0..7]
MA[0..10]
MD[0..47]
BA
BGA_CASE
3619 22R/PM5/ARV241
3620 22R/PM5/ARV241
3621 22R/PM5/ARV241
+3.3VD
+3.3VS
5601 BLM31P500S
5602 BLM31P500S
5603 BLM31P500S
2601 100N/0805
2604 100N/0805
2605 100N/0805
2602 10U/1206
2603 100N/0805
2609 100N/0805
2610 10U/1206
2611 470P/0805
1601 27MHZ/OSC/SMD
VCC
OUT
NC
GND
3641 100R/PM5/0805
(O/P) OVCLK
/RST_6721
IICSCL
IICSDA
3614 100R/PM5/0805
3615 100R/PM5/0805
2606 100P/0805
2607 100P/0805
3616 22R/PM5/0805
2608 22P/0805
MCLK
3617 22R/PM5/ARV241
/RAS
/CAS
/WE
DQM
3618 22R/PM5/ARV241
PDE
PCLK
PVS
PHS
/INT_6721
OVACT (I/P)
/OVHS (O/P)
/OVVS (O/P)
VHS
VS-MCU
VCLK
3634 1K/PM5/ARV241
+5VD
5631 BLM31P500S
5632 BLM31P500S
2631 1U/0805
2632 1U/0805
7631
MTV130P
VSSA
PIX
TEST
VDDA
/HFLB
/RST
SDA
SCLK
VSS
R
G
B
FBKG
INT
/VFLB
VDD
OVCLK
/OVHS
/RST_OSD
2.3V
3632 100R/PM5/0805
3633 100R/PM5/0805
/OVVS
3635 0R/PM5/ARV241
3636 10K/PM5/ARV241
OV0
OV1
OV2
OVACT
A16
A17
A25
A26
A27
A28
A29
A30
A31
Showing OSD menu on the screen
Showing OSD menu on the screen

DEFAULT: HIGH-->SEL. DVI, H/V OUTPUT DISABLED

BECAUSE MCU IS POLLING DVI,D-SUB INTERFACE PERIODICALLY, THE POLLING ACTION CANNOT CAUSE H/V SIGNAL INTERRUPTION.
THEREFORE, RAW H/V SIGNALS SELECTION FOR MODE DETECTION CANNOT BE CONNECTED TO THE SAME SWITCH AS H/V SIGNALS FOR DATA PATH TIMING REFERENCE.

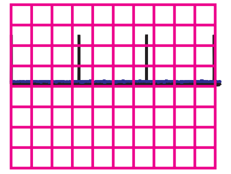
Waveforms

A16 3215



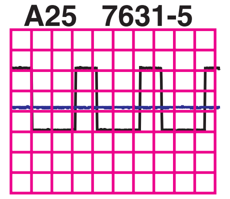
2 V/div AC
5 uS/div

A17 3216



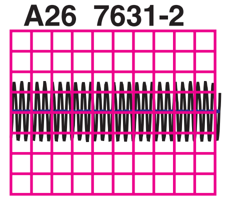
2 V/div AC
5 mS/div

A25 7631-5



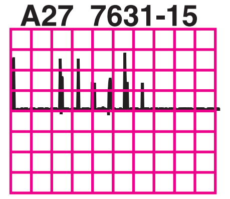
0.01 V/div AC
5 uS/div

A26 7631-2



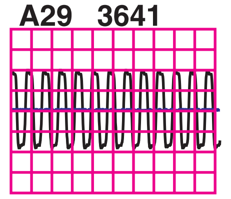
0.02 V/div AC
50 nS/div

A27 7631-15



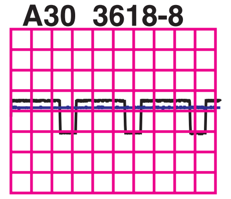
0.02 V/div AC
20 uS/div

A29 3641



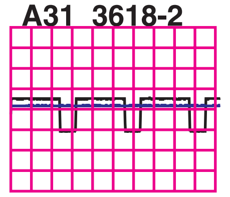
0.01 V/div AC
50 nS/div

A30 3618-8



0.02 V/div AC
5 uS/div

A31 3618-2



0.02 V/div AC
50 nS/div

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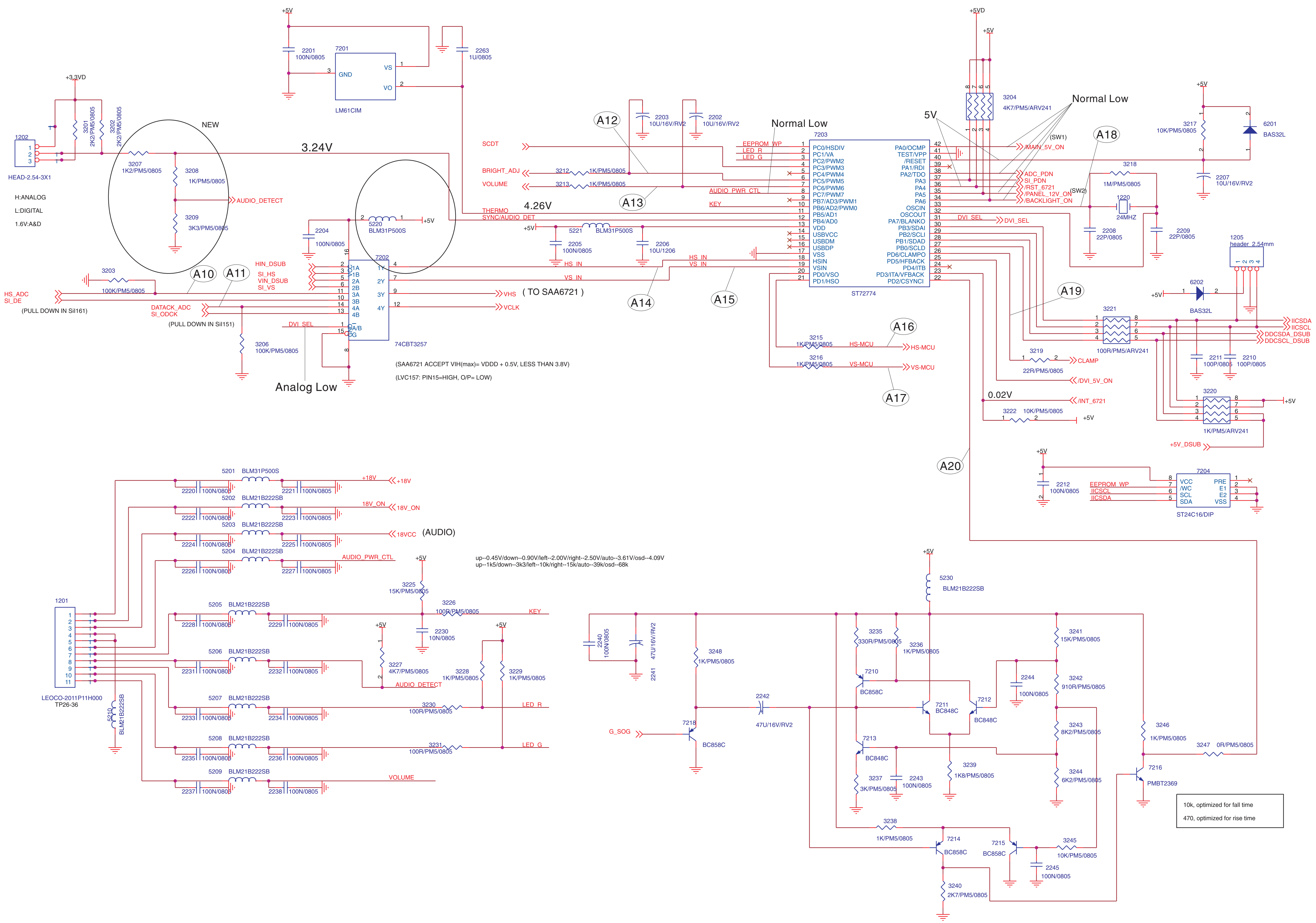
Schematic Diagram (MCU)

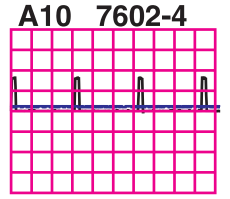

+3.3VD
1202
HEAD-2.54-3X1
H:ANALOG
L:DIGITAL
1.6V:A&D
3201 2K2/PM5/0805
3202 2K2/PM5/0805
NEW
3.24V
3207 1K2/PM5/0805
3208 1K/PM5/0805
3209 3K3/PM5/0805
AUDIO_DETECT
+5V
2201 100N/0805
7201
LM61CIM
GND
VS
VO
2263 1U/0805
SCDT
BRIGHT_ADJ
VOLUME
3212 1K/PM5/0805
3213 1K/PM5/0805
THERMO
SYNC/AUDIO_DET
4.26V
A12
A13
2203 10U/16V/RV2
2202 10U/16V/RV2
Normal Low
7203
ST72774
EEPROM_WP
LED_R
LED_G
AUDIO_PWR_CTL
KEY
PC0/HSDIV
PC1/VA
PC2/PWM2
PC3/PWM3
PC4/PWM4
PC5/PWM5
PC6/PWM6
PC7/PWM7
PB7/AD3/PWM1
PB6/AD2/PWM0
PB5/AD1
PB4/AD0
VDD
USBVCC
USBDM
USBDP
VSS
HSIN
VSIN
PD0/VSO
PD1/HSO
PA0/OCMP
TEST/VPP
/RESET
PA1/RDI
PA2/TDO
PA3
PA4
PA5
PA6
OSCIN
OSCOUT
PA7/BLANKO
PB3/SDAI
PB2/SCLI
PB1/SDAD
PB0/SCLD
PD6/CLAMPO
PD5/HFBACK
PD4/ITB
PD3/ITA/VFBACK
PD2/CSYNCI
5V
+5VD
3204 4K7/PM5/ARV241
Normal Low
(SW1)
MAIN_5V_ON
ADC_PDN
SI_PDN
/RST_6721
/PANEL_12V_ON
/BACKLIGHT_ON
(SW2)
DVI_SEL
A18
3218 1M/PM5/0805
1220 24MHZ
2208 22P/0805
2209 22P/0805
3217 10K/PM5/0805
6201 BAS32L
2207 10U/16V/RV2
1205 header_2.54mm
6202 BAS32L
A19
3221 100R/PM5/ARV241
IICSDA
IICSCL
DDCSDA_DSUB
DDCSCL_DSUB
2211 100P/0805
2210 100P/0805
3219 22R/PM5/0805
CLAMP
/DVI_5V_ON
0.02V
/INT_6721
3222 10K/PM5/0805
3220 1K/PM5/ARV241
+5V_DSUB
2212 100N/0805
7204
ST24C16/DIP
VCC /WC SCL SDA PRE E1 E2 VSS
IICSCL
IICSDA
A20
2204 100N/0805
5220 BLM31P500S
5221 BLM31P500S
2205 100N/0805
2206 10U/1206
7202
74CBT3257
HS_IN
VS_IN
A14
A15
(TO SAA6721)
VHS
VCLK
HS_ADC
SI_DE
3203 100K/PM5/0805
(PULL DOWN IN Sil161)
HSI_DSUB
SI_HS
VIN_DSUB
SI_VS
DATACK_ADC
SI_ODCK
(PULL DOWN IN Sil151)
DVI_SEL
3206 100K/PM5/0805
Analog Low
A10
A11
A16
A17
3215 1K/PM5/0805
3216 1K/PM5/0805
HS-MCU
VS-MCU
(SAA6721 ACCEPT VIH(max)= VDDD + 0.5V, LESS THAN 3.8V)
(LVC157: PIN15=HIGH, O/P= LOW)
1201
LEOCO-2011P11H000 TP26-36
5210 BLM21B222SB
5201 BLM31P500S
5202 BLM21B222SB
5203 BLM21B222SB
5204 BLM21B222SB
5205 BLM21B222SB
5206 BLM21B222SB
5207 BLM21B222SB
5208 BLM21B222SB
5209 BLM21B222SB
+18V
18V_ON
18VCC
(AUDIO)
AUDIO_PWR_CTL
KEY
LED_R
LED_G
VOLUME
3225 15K/PM5/0805
3226 100R/PM5/0805
2230 10N/0805
3227 4K7/PM5/0805
3228 1K/PM5/0805
3229 1K/PM5/0805
AUDIO_DETECT
3230 100R/PM5/0805
3231 100R/PM5/0805
up--0.45V/down--0.90V/left--2.00V/right--2.50V/auto--3.61V/osd--4.09V
up--1k5/down--3k3/left--10k/right--15k/auto--39k/osd--68k
5230 BLM21B222SB
2240 100N/0805
2241 47U/16V/RV2
3248 1K/PM5/0805
7218 BC858C
G_SOG
2242 47U/16V/RV2
3235 330R/PM5/0805
3236 1K/PM5/0805
7210 BC858C
7211 BC848C
7212 BC848C
2244 100N/0805
3241 15K/PM5/0805
3242 910R/PM5/0805
3243 8K2/PM5/0805
3244 6K2/PM5/0805
7213 BC848C
3237 3K/PM5/0805
2243 100N/0805
3239 1K8/PM5/0805
3246 1K/PM5/0805
3247 0R/PM5/0805
7216 PMBT2369
3238 1K/PM5/0805
7214 BC858C
7215 BC858C
3245 10K/PM5/0805
2245 100N/0805
3240 2K7/PM5/0805

10k, optimized for fall time

470, optimized for rise time

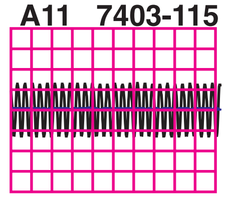
Waveforms

A10 7602-4



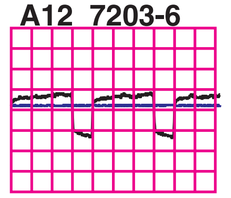
2 V/div AC
5 uS/div

A11 7403-115



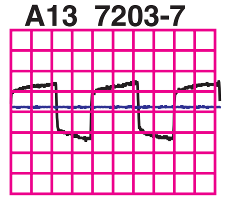
2 V/div AC
50 nS/div

A12 7203-6



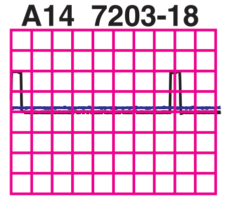
0.1 V/div AC
2 uS/div

A13 7203-7



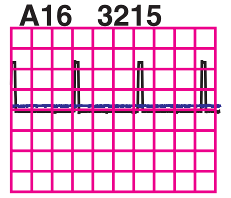
0.1V/div AC
2 uS/div

A14 7203-18



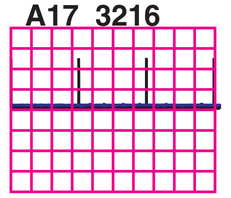
2 V/div AC
2 uS/div

A16 3215



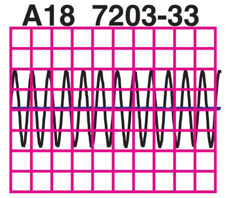
2 V/div AC
5 uS/div

A17 3216



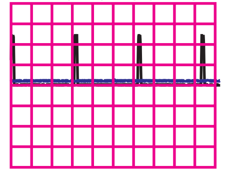
2 V/div AC
5 mS/div

A18 7203-33



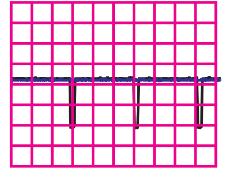
0.5 V/div AC
50 nS/div

A19 3203-26



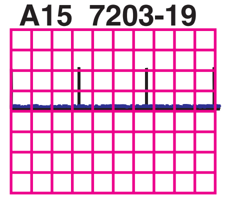
2 V/div AC
5 uS/div

A20 7203-22



2 V/div AC
2 uS/div

A15 7203-19



2 V/div AC
5 mS/div

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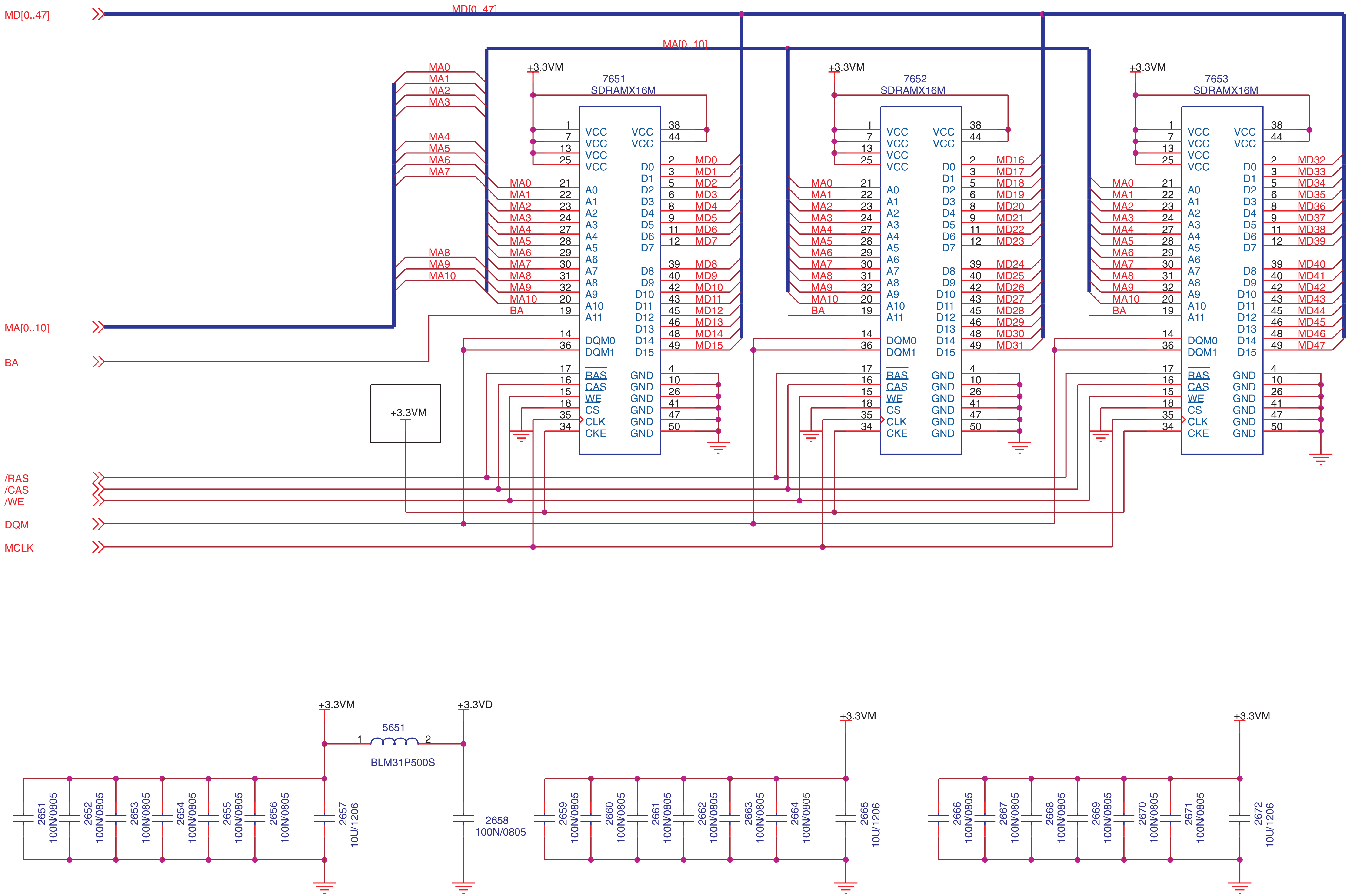
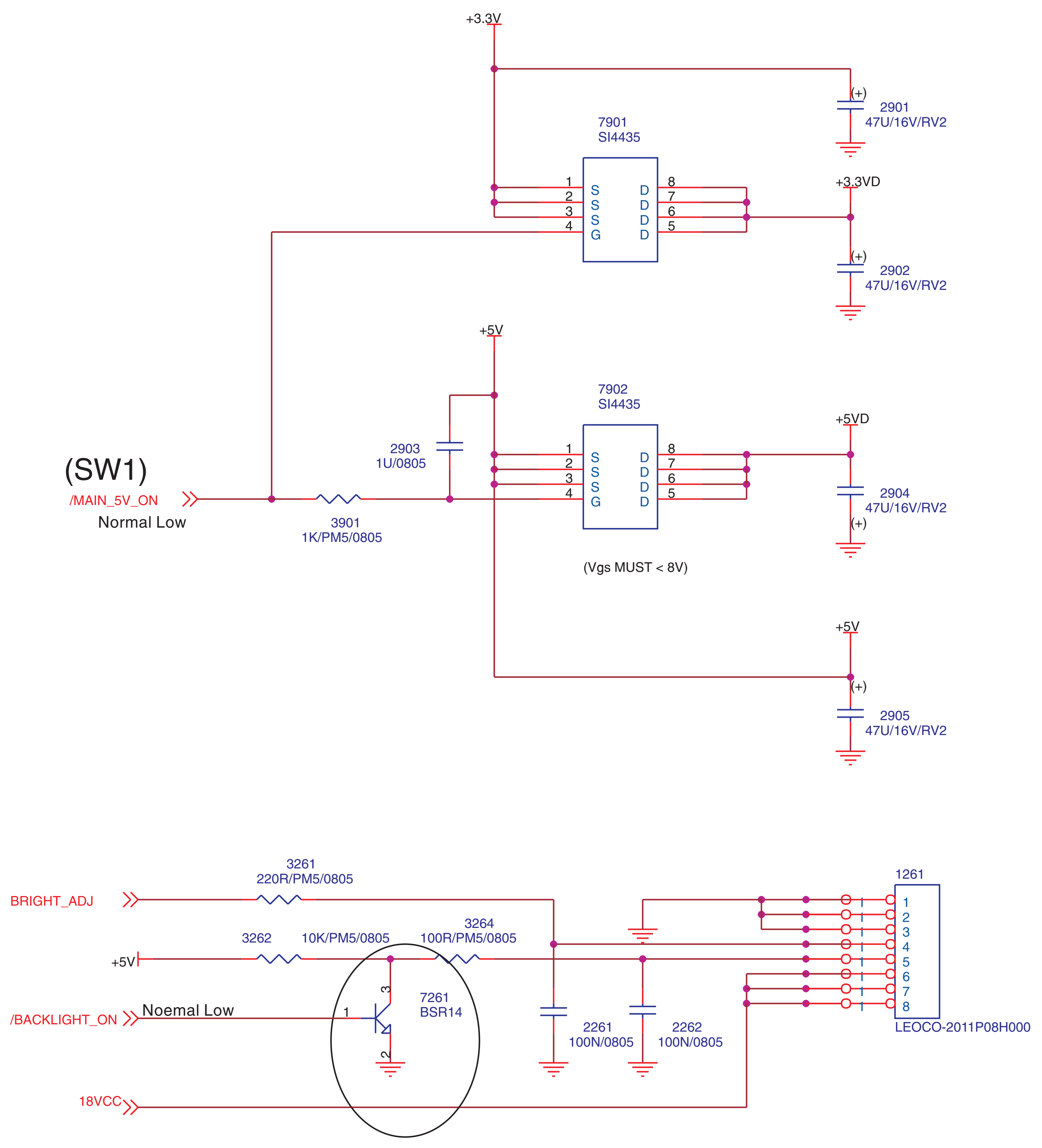
Schematic Diagram (FRAME BUFFER)


MD[0..47]
MA[0..10]
BA
/RAS
/CAS
/WE
DQM
MCLK
+3.3VM
7651
SDRAMX16M
7652
SDRAMX16M
7653
SDRAMX16M
VCC
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
DQM0
DQM1
RAS
CAS
WE
CS
CLK
CKE
D0
D15
GND
MD0
MD15
MD16
MD31
MD32
MD47
+3.3VD
5651
BLM31P500S
2651
100N/0805
2652
2653
2654
2655
2656
2657
10U/1206
2658
100N/0805
2659
2660
2661
2662
2663
2664
2665
10U/1206
2666
2667
2668
2669
2670
2671
2672
10U/1206

Schematic Diagram (Power saving)


+3.3V
7901
SI4435
2901
47U/16V/RV2
+3.3VD
2902
47U/16V/RV2
+5V
7902
SI4435
2903
1U/0805
+5VD
2904
47U/16V/RV2
(SW1)
/MAIN_5V_ON
Normal Low
3901
1K/PM5/0805
(Vgs MUST < 8V)
+5V
2905
47U/16V/RV2
BRIGHT_ADJ
3261
220R/PM5/0805
3262
10K/PM5/0805
3264
100R/PM5/0805
+5V
/BACKLIGHT_ON
Noemal Low
7261
BSR14
2261
100N/0805
2262
100N/0805
18VCC
1261
LEOCO-2011P08H000

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Forward

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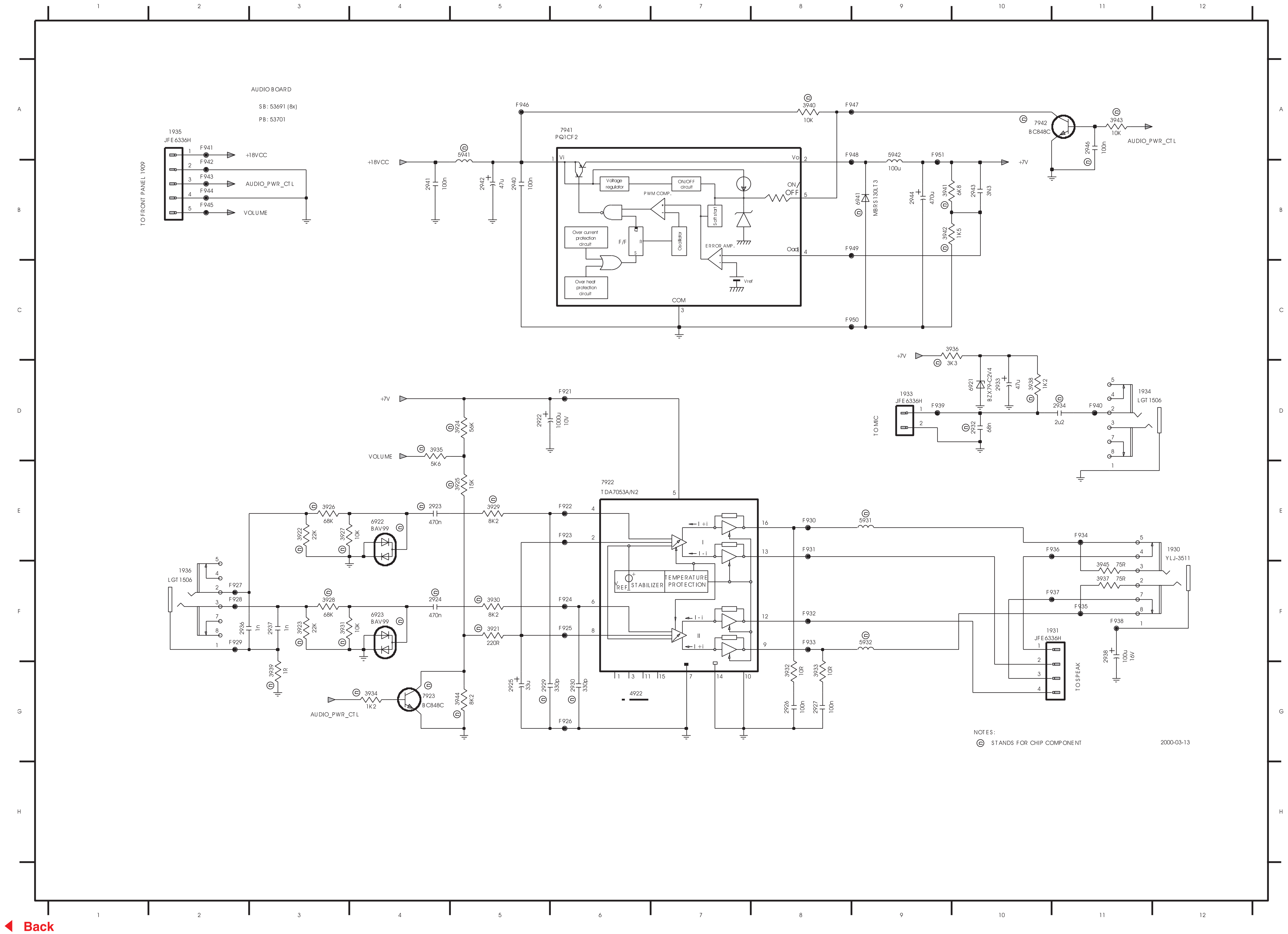
Schematic Diagram (Audio)

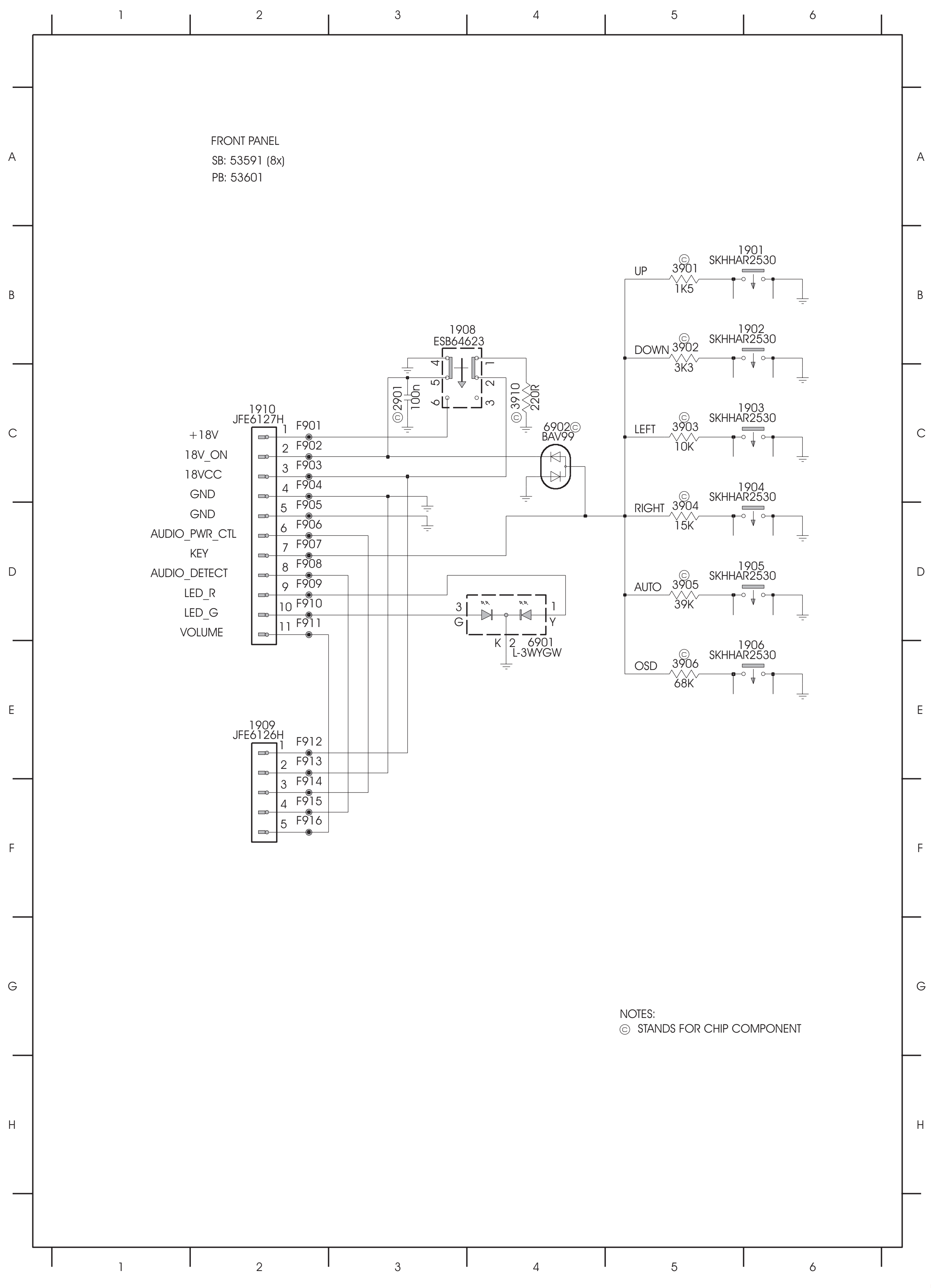

AUDIO BOARD
SB: 53691 (8x)
PB: 53701
1935
JFE6336H
TO FRONT PANEL 1909
F941
F942
F943
F944
F945
+18VCC
AUDIO_PWR_CTL
VOLUME
F946
3940
10K
F947
7941
PQ1CF2
Voltage regulator
ON/OFF circuit
PWM COMP.
Over current protection circuit
Over heat protection circuit
F/F
Oscillator
ERROR AMP.
Vref
COM
ON/OFF
Vo
Vin
Oadj
5941
2941
100n
2942
47u
2940
100n
F948
5942
100u
F951
+7V
6941
MBRS130LT3
2944
470u
3941
6K8
2943
3N3
3942
1K5
F949
F950
7942
BC848C
3943
10K
2946
100n
AUDIO_PWR_CTL
+7V
3936
3K3
6921
BZX79-C2V4
2933
47u
3938
1K2
1933
JFE6336H
TO MIC
F939
2932
68N
2934
2u2
F940
1934
LGT1506
F921
2922
1000u
10V
3924
56K
VOLUME
3935
5K6
3925
10K
7922
TDA7053A/N2
STABILIZER
TEMPERATURE PROTECTION
REF
3926
68K
3922
22K
3927
10K
6922
BAV99
2923
470n
3929
8K2
F922
F923
1936
LGT1506
F927
F928
F929
2936
1n
2937
1n
3928
68K
3923
22K
3931
10K
6923
BAV99
2924
470n
3930
8K2
F924
3921
220R
F925
3939
1K
3934
1K2
7923
BC848C
3944
8K2
AUDIO_PWR_CTL
2925
33u
2929
330p
2930
330p
F926
4922
F930
5931
F931
F932
F933
5932
3932
10R
3933
10R
2926
100n
2927
100n
F934
F936
3945
75R
3937
75R
F937
F935
F938
1930
YLJ-3511
1931
JFE6336H
TO SPEAK
2938
100u
16V

NOTES:
© STANDS FOR CHIP COMPONENT

2000-03-13

1930	E12
1931	F10
1933	D9
1934	D11
1935	A2
1936	F2
2922	D5
2923	E4
2924	F4
2925	G5
2926	G8
2927	G8
2929	G5
2930	G6
2932	D10
2933	D10
2934	D11
2936	F2
2937	F3
2938	F11
2940	B5
2941	B4
2942	B5
2943	B10
2944	B9
2946	A11
3921	F5
3922	E3
3923	F3
3924	D5
3925	E5
3926	E3
3927	E3
3928	F3
3929	E5
3930	F5
3931	F3
3932	G8
3933	G8
3934	G4
3935	D4
3936	C10
3937	F11
3937	F11
3938	D10
3939	G3
3940	A8
3941	B9
3942	B9
3943	A11
3944	G5
4922	G6
5931	E9
5932	F9
5941	A5
5942	A9
6921	D10
6922	E4
6923	F4
6941	B9
7922	E6
7923	G4
7941	A6
7942	A10
F921	D6
F922	E6
F923	E6
F924	F6
F925	F6
F926	G6
F927	F2
F928	F2
F929	F2
F930	E8
F931	E8
F932	F8
F933	F8
F934	E11
F935	F11
F936	E11
F937	F11
F938	F11
F939	D9
F940	D11
F941	A2
F942	B2
F943	B2
F944	B2
F945	B2
F946	A5
F947	A9
F948	A9
F949	B9
F950	C9
F951	A9

Schematic Diagram (Control panel)


FRONT PANEL
SB: 53591 (8x)
PB: 53601
UP
3901
1K5
1901
SKHHAR2530
DOWN
3902
3K3
1902
SKHHAR2530
LEFT
3903
10K
1903
SKHHAR2530
RIGHT
3904
15K
1904
SKHHAR2530
AUTO
3905
39K
1905
SKHHAR2530
OSD
3906
68K
1906
SKHHAR2530
1908
ES864623
2901
100n
3910
220R
6902
BAV99
1910
JFE6127H
+18V
18V_ON
18VCC
GND
GND
AUDIO_PWR_CTL
KEY
AUDIO_DETECT
LED_R
LED_G
VOLUME
F901
F902
F903
F904
F905
F906
F907
F908
F909
F910
F911
6901
L-3WYGW
1909
JFE6126H
F912
F913
F914
F915
F916

NOTES:
© STANDS FOR CHIP COMPONENT

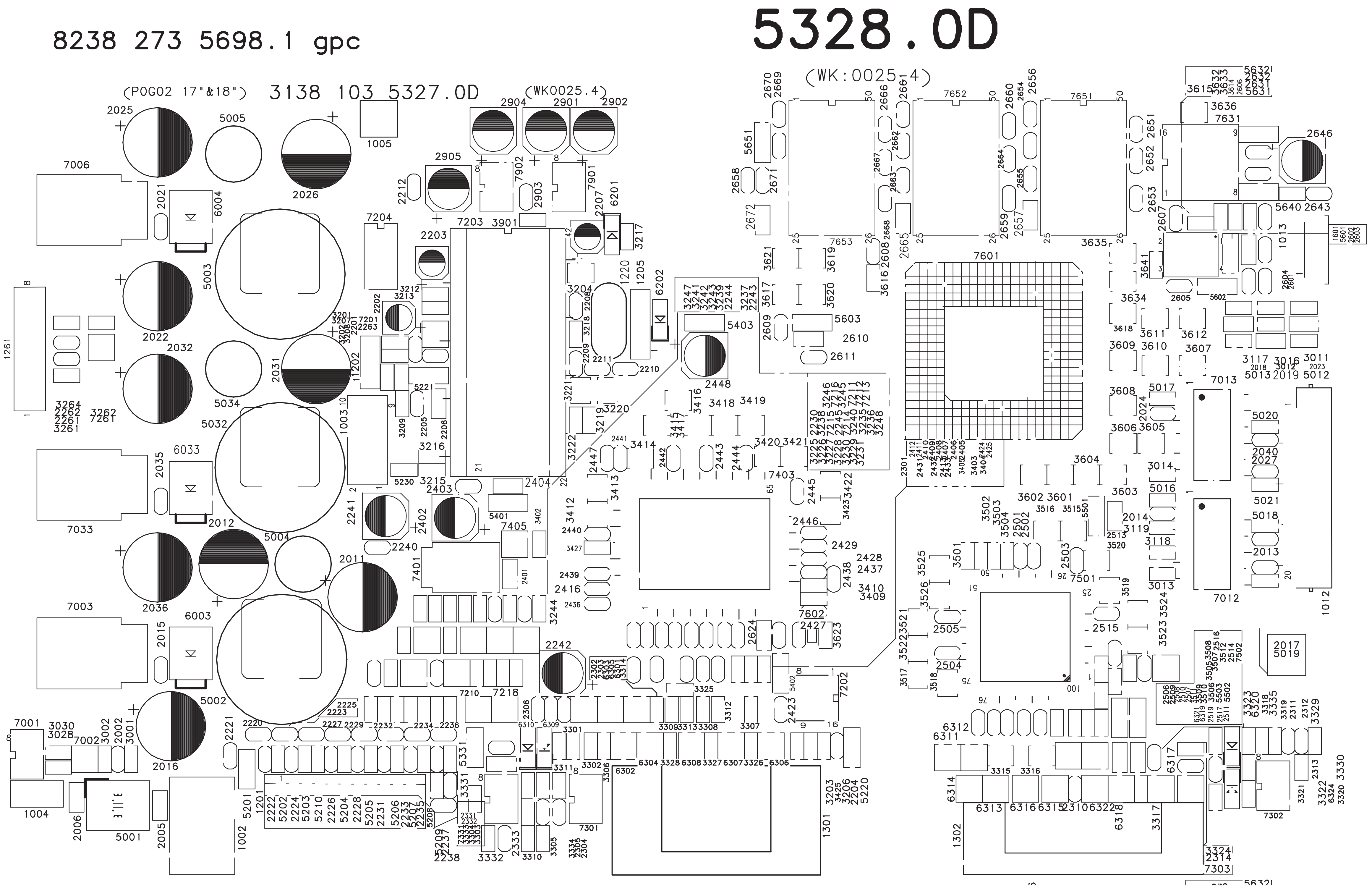
1901	B6
1902	B6
1903	C6
1904	C6
1905	D6
1906	D6
1908	B3
1909	E2
1910	C2
2901	C3
3901	B5
3902	B5
3903	C5
3904	D5
3905	D5
3906	E5
3910	C4
6901	E4
6902	C4
F901	C2
F902	C2
F903	C2
F904	C2
F905	D2
F906	D2
F907	D2
F908	D2
F909	D2
F910	D2
F911	D2
F912	E2
F913	E2
F914	F2
F915	F2
F916	F2

Back

Forward

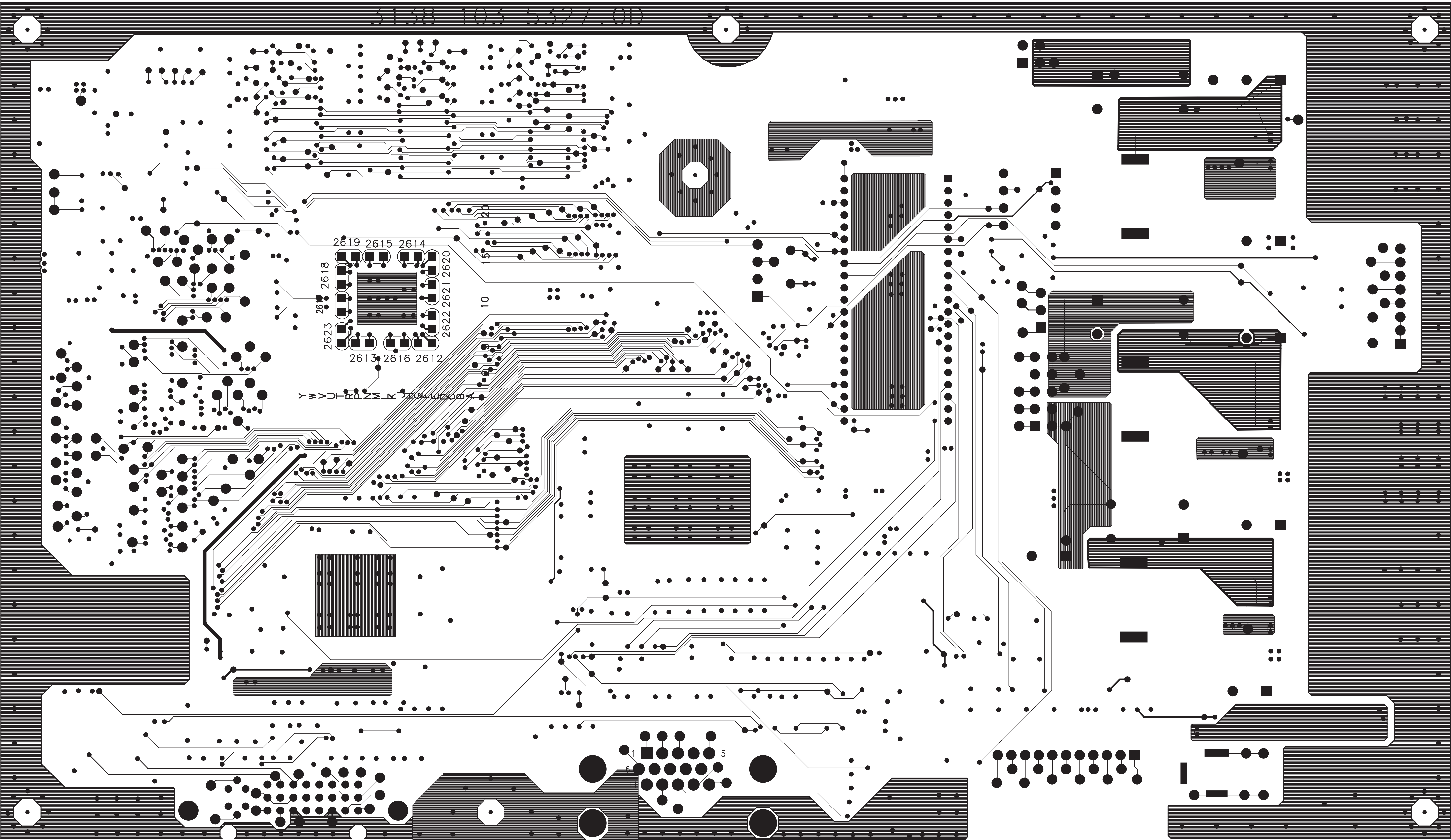
Main panel C.B.A. Component position

Back to Main panel C.B.A.


8238 273 5698.1 gpc
5328.0D
(POGO2 17"&18")
3138 103 5327.0D
(WK0025.4)
(WK:0025.4)
2025
5005
1005
2026
7006
2021
6004
5003
1261
2022
2032
2031
5034
5032
3264
2262
2261
3261
3262
7261
6033
2035
7033
2012
5004
2011
2036
6003
7003
2015
5002
2016
7001
3030
3028
7002
3002
2002
3001
1004
2006
5001
2005
1002
5201
1201
2221
2220
2904
2901
2902
2905
7902
2903
7901
2212
2207
6201
7204
7203
3901
2203
3212
3213
2202
3201
3202
7201
2263
1202
5221
3209
2205
2206
1003
3216
5230
3215
2403
2241
2402
2240
7401
5401
7405
3402
2401
3204
2208
3218
2209
2211
2210
1220
1205
6202
3217
3221
3219
3220
3222
2447
3412
3413
2440
3427
2439
2416
2436
3244
2242
2448
5403
3416
3418
3419
3415
3417
3414
2441
2442
2443
2444
3420
3421
7403
2445
3422
3423
2446
2429
2428
2437
2438
3410
3409
7602
2427
3623
2624
2423
5402
7202
3325
3312
3307
3301
3302
3306
6302
6304
3328
6308
3327
6307
3326
6306
1301
3203
3425
3206
2204
5220
7210
7218
2306
6310
6309
3311
2225
2223
2227
2229
2232
2234
2236
5331
3331
3332
2333
3310
3305
7301
2238
2670
2669
5651
2658
2671
2672
2666
2667
2662
2663
2661
7652
2660
2654
2664
2655
2659
2657
2656
7651
2651
2652
2653
2607
7653
3621
3619
3617
3620
2608
2668
3616
2665
3635
7601
2609
5603
2610
2611
3237
2243
3247
3241
3242
3239
2244
3225
3226
3227
3228
3230
3231
3246
3238
3215
3245
3240
3236
3248
7216
7215
7214
7211
7212
7213
2301
3403
3404
3604
3602
3601
3516
3515
5501
3502
3503
3504
2501
2502
3501
3525
3526
3522
3521
3517
3518
2505
2504
2503
7501
3519
2515
3523
3524
6312
6311
3315
3316
6314
1302
6313
6316
6315
2310
6322
6318
3317
3324
2314
7303
5632
3615
3632
3633
3636
7631
2646
5640
2643
1013
2604
2601
3641
3634
2605
5602
3618
3611
3612
3609
3610
3607
3117
3016
3011
2018
3012
2023
5013
2019
5012
7013
3608
5017
2024
3606
3605
5020
2040
2027
3014
3603
5016
5021
2014
3119
2513
3520
3118
5018
2013
3013
7012
1012
2017
5019
6317
3323
6320
3318
3335
3319
2311
2312
3329
3321
2313
3322
6324
3320
3330
7302

Main panel C.B.A. Back side

Back to Main panel C.B.A.


3138 103 5327.0D
2619
2615
2614
2620
2621
2622
2618
2617
2623
2613
2616
2612
20
15
10
1
5
6
11

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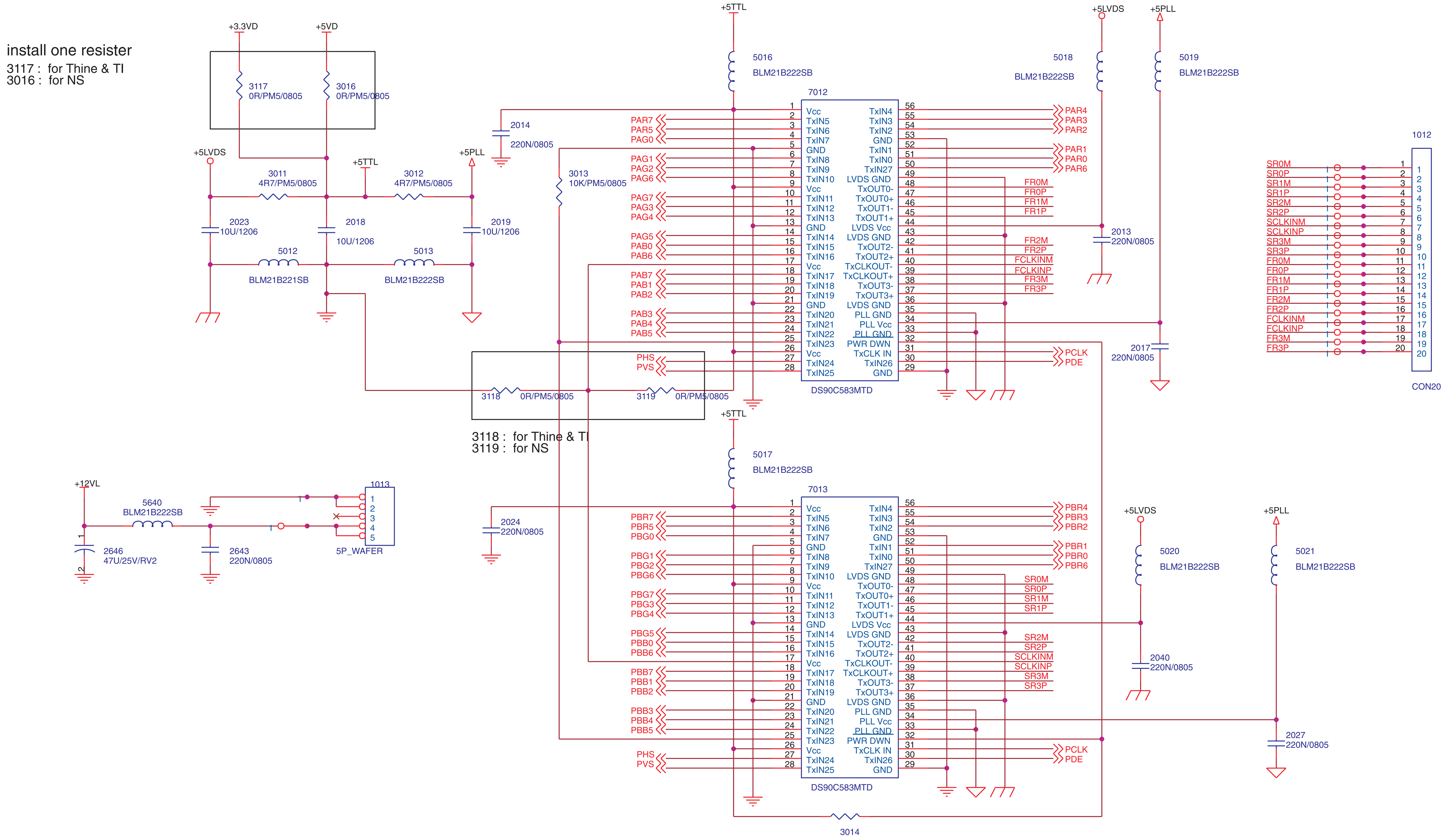
Schematic Diagram (TTL to LVDS)


install one resister
3117 : for Thine & TI
3016 : for NS
+3.3VD
+5VD
3117
0R/PM5/0805
3016
0R/PM5/0805
+5LVDS
+5TTL
+5PLL
3011
4R7/PM5/0805
3012
4R7/PM5/0805
2023
10U/1206
2018
10U/1206
2019
10U/1206
5012
BLM21B221SB
5013
BLM21B222SB
2014
220N/0805
3013
10K/PM5/0805
5016
BLM21B222SB
5018
BLM21B222SB
5019
BLM21B222SB
7012
DS90C583MTD
PAR7
PAR5
PAG0
PAG1
PAG2
PAG6
PAG7
PAG3
PAG4
PAG5
PAB0
PAB6
PAB7
PAB1
PAB2
PAB3
PAB4
PAB5
PHS
PVS
Vcc
TxIN5
TxIN6
TxIN7
GND
TxIN8
TxIN9
TxIN10
TxIN11
TxIN12
TxIN13
TxIN14
TxIN15
TxIN16
TxIN17
TxIN18
TxIN19
TxIN20
TxIN21
TxIN22
TxIN23
TxIN24
TxIN25
TxIN4
TxIN3
TxIN2
TxIN1
TxIN0
TxIN27
LVDS GND
TxOUT0-
TxOUT0+
TxOUT1-
TxOUT1+
LVDS Vcc
TxOUT2-
TxOUT2+
TxCLKOUT-
TxCLKOUT+
TxOUT3-
TxOUT3+
PLL GND
PLL Vcc
PWR DWN
TxCLK IN
TxIN26
PAR4
PAR3
PAR2
PAR1
PAR0
PAR6
FR0M
FR0P
FR1M
FR1P
FR2M
FR2P
FCLKINM
FCLKINP
FR3M
FR3P
PCLK
PDE
2013
220N/0805
2017
220N/0805
3118
0R/PM5/0805
3119
0R/PM5/0805
3118 : for Thine & TI
3119 : for NS
1012
SR0M
SR0P
SR1M
SR1P
SR2M
SR2P
SCLKINM
SCLKINP
SR3M
SR3P
CON20
+12VL
5640
BLM21B222SB
2646
47U/25V/RV2
2643
220N/0805
1013
5P_WAFER
2024
220N/0805
5017
BLM21B222SB
7013
DS90C583MTD
PBR7
PBR5
PBG0
PBG1
PBG2
PBG6
PBG7
PBG3
PBG4
PBG5
PBB0
PBB6
PBB7
PBB1
PBB2
PBB3
PBB4
PBB5
PBR4
PBR3
PBR2
PBR1
PBR0
PBR6
5020
BLM21B222SB
5021
BLM21B222SB
2040
220N/0805
2027
220N/0805
3014

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Forward

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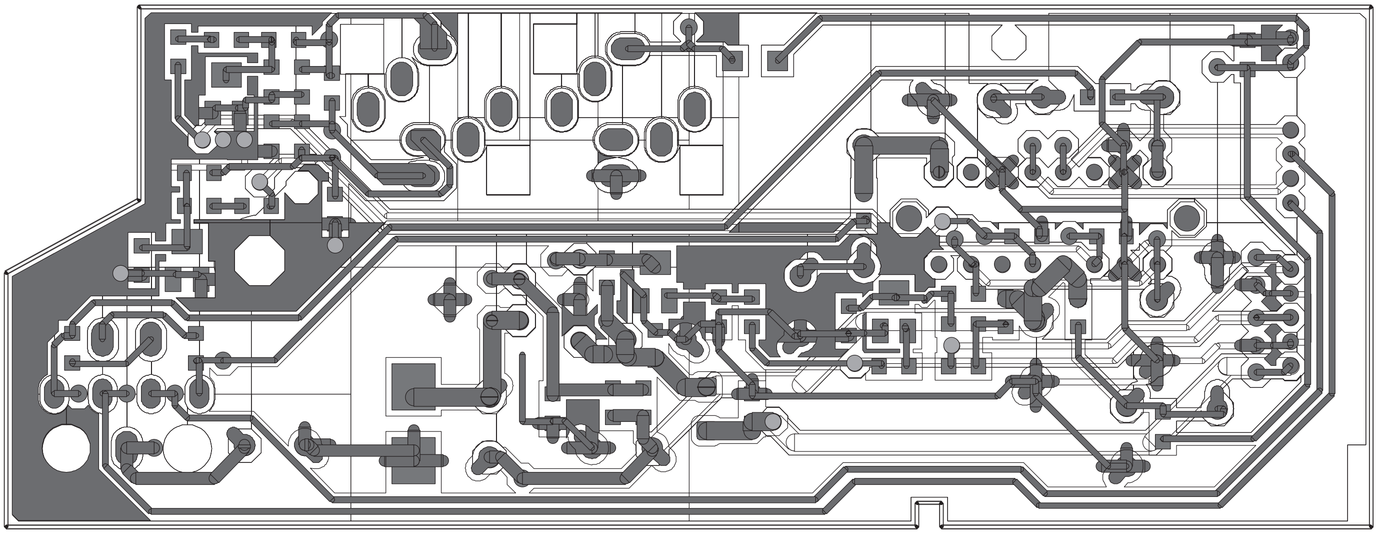
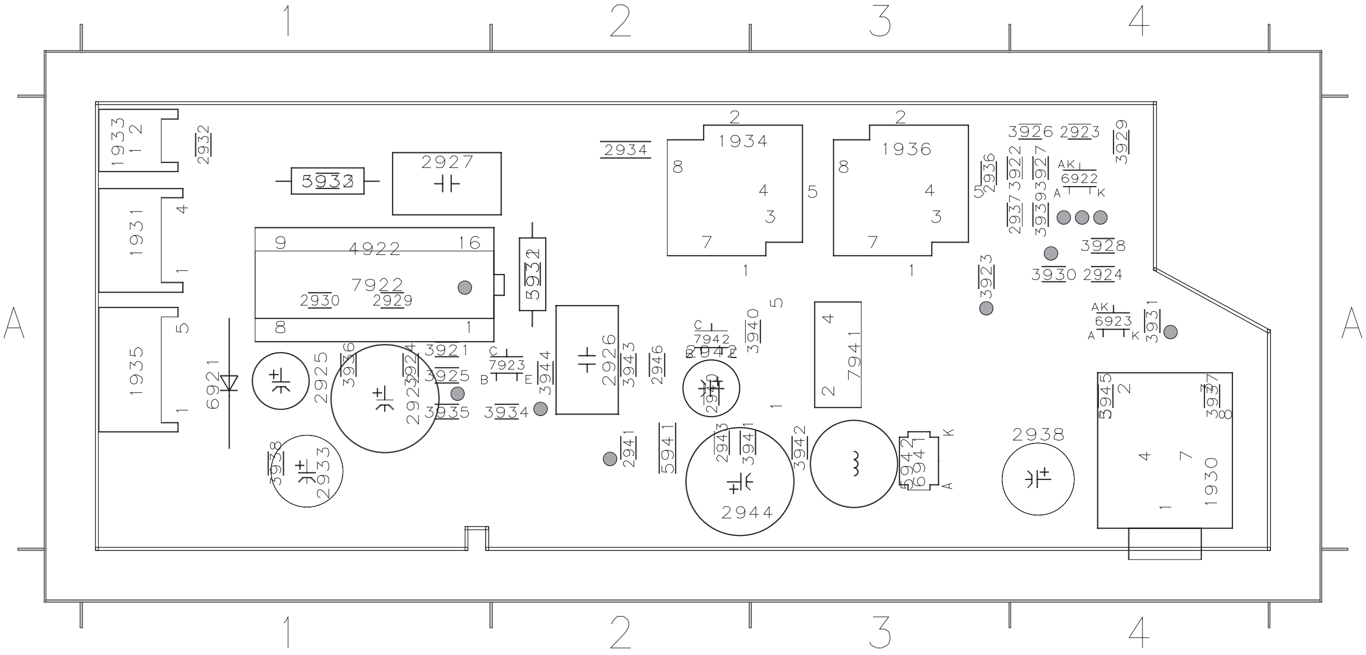
Audio Panel C.B.A.

Copper Side



Component Side


1
2
3
4
A
1933
1 2
2932
1931
4
1
1935
5
1
5933
2927
4922
9
16
7922
2930
2929
8
1
5932
6921
2925
3936
2922
2924
3921
3925
3935
3934
7923
C
B
E
3944
2926
3943
2946
7942
3940
2940
2934
1934
2
8
4
3
7
1
5
1936
2
8
4
3
7
1
2936
2937
3922
3939
3927
3926
2923
6922
AK
A
K
3929
3928
3930
2924
3923
6923
3931
7941
4
2
3938
2933
2941
5941
2943
3941
2944
3942
5942
6941
K
A
2938
3945
3937
1930
2
4
7
1
8

3924	A1	3925	A1	1930	A4	1931	A1	6921	A1	7922	A1	5931	A2
3926	A4	3927	A4	1933	A1	1934	A2	7941	A3	2923	A4	5932	A1
3928	A4	3929	A4	1935	A1	1936	A3	2924	A4	2929	A1	5941	A2
3930	A4	3931	A4	2922	A1	2925	A1	2930	A1	2932	A1	6922	A4
3934	A2	3935	A1	2926	A2	2927	A1	2934	A2	2936	A3	6923	A4
3936	A1	3937	A4	2933	A1	2938	A4	2937	A4	2940	A2	6941	A3
3938	A1	3939	A4	2942	A2	2944	A2	2941	A2	2943	A2	7923	A2
3940	A3	3941	A2	3932	A2	3933	A1	2946	A2	3921	A1	7942	A2
3942	A3	3943	A2	4922	A1	5942	A3	3922	A4	3923	A3	3945	A4
3944	A2												

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Repair Tips

0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

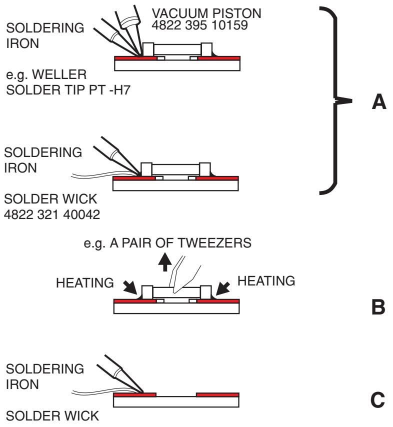
1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING



- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

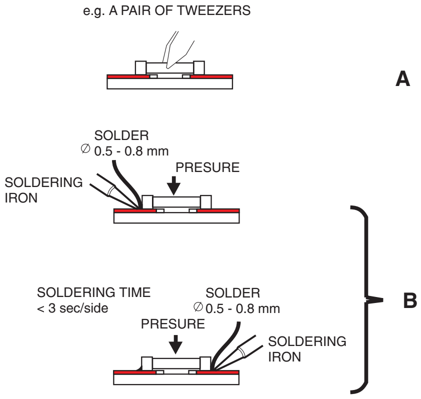
1.3 Caution on removal

- When handling the soldering.iron. use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig.2A).
- Next complete the soldering of the terminals of the component (see Fiq. 2B).

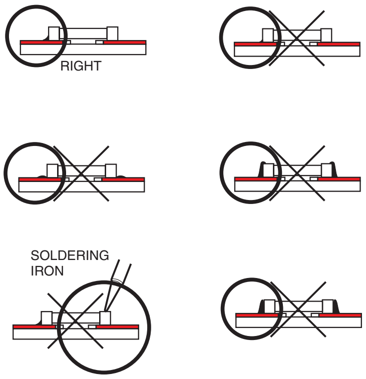
Fig. 2 MOUNTING



2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

Fig. 3 Examples



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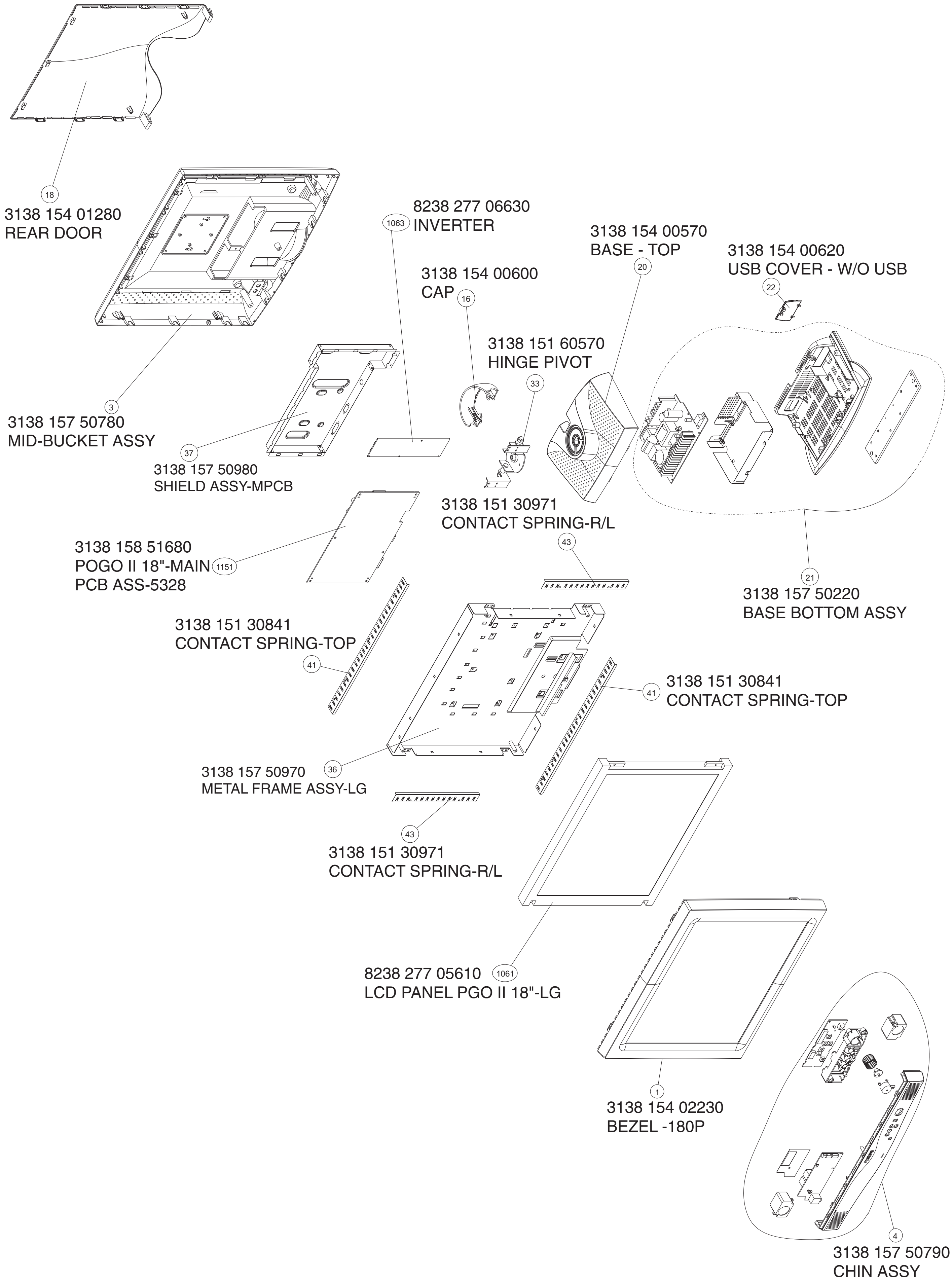
Exploded View


18
3138 154 01280
REAR DOOR
1063
8238 277 06630
INVERTER
3138 154 00570
BASE - TOP
20
3138 154 00620
USB COVER - W/O USB
22
3138 154 00600
CAP
16
3138 151 60570
HINGE PIVOT
33
3
3138 157 50780
MID-BUCKET ASSY
37
3138 157 50980
SHIELD ASSY-MPCB
3138 151 30971
CONTACT SPRING-R/L
43
3138 158 51680
POGO II 18"-MAIN
1151
PCB ASS-5328
21
3138 157 50220
BASE BOTTOM ASSY
3138 151 30841
CONTACT SPRING-TOP
41
41
3138 151 30841
CONTACT SPRING-TOP
3138 157 50970
36
METAL FRAME ASSY-LG
43
3138 151 30971
CONTACT SPRING-R/L
8238 277 05610
1061
LCD PANEL PGO II 18"-LG
1
3138 154 02230
BEZEL -180P
4
3138 157 50790
CHIN ASSY

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Recommended Parts List

PHILIPS 180P
Type number: 180P1L/00
Recommended Parts indicated as below,

Item	Code number	Description
450	3138 156 30060	CARTON
451	3138 156 30070	FORM SHEET (FRONT)
452	3138 156 30080	FORM SHEET (BACK)
453	3138 156 20800	P.E.BAG-ANTI-STAT.
1	3138 155 20460	QUICK SETUP GUIDE-180P
4	3138 157 50790	CHIN ASSY
1	3138 154 02230	BEZEL-180P
18	3138 154 01280	REAR DOOR
3	3138 157 50780	MID-BUCKET ASSY
37	3138 157 50980	SHIELD ASSY-MPCB
36	3138 157 50970	METAL FRAME ASSY-LG
41	3138 151 30840	CONTACT SPRING-TOP
43	3138 151 30970	CONTACT SPRING-R/L
16	3138 154 00600	CAP
33	3138 151 60570	HINGE PIVOT
20	3138 154 00570	BASE - TOP
21	3138 157 50220	BASE BOTTOM ASSY
22	3138 154 00620	USB COVER - W/O-USB
2	3138 155 20350	MANUAL-USING YOUR MONITOR
1	3138 154 00580	BASE - BOTTOM
20	3138 154 00570	BASE - TOP
23	3138 151 30290	SHIELD-BASE
128	3138 106 32610	P.E. BAG
⚠1004	2422 086 10929	FUSE SM SSQ F 5.0A 125V R
⚠1102	2422 086 10239	FUSE HRC T3.15AH/250V S
1061	8238 277 05610	LCD PANEL POGO II 18"-LG
1063	8238 277 06630	INVERTER
1151	3138 158 51680	POGO II 18"-MAIN PCB ASSY-5328
1152	3138 158 51690	CONTROL PCB ASSY-5360
1153	3138 158 51700	AC ADAPTOR PCB ASSY-5390
1154	3138 158 51710	AUDIO PCB ASSY-5370
1051	2438 070 98032	MAINS CORD (220V)
1052	3138 168 75960	I/F CABLE(POTOMAC-BRD)
1053	3138 168 76400	DVI-d cable
1091	8238 277 05990	SPEAKER W/BOX + WIRE ASSY
1093	3138 178 79900	MICPHONE W/ WIRE ASSY
1391	3138 158 51730	EEPROM IC ASSY(7204)
1392	3138 158 51740	CPU WITH PROGRAM ASSY(7203)
7003	8238 277 05300	IC LM2596SX-5.0
7006	9322 158 38668	IC REGULATOR LM2596S-12
7012	8238 277 05000	IC THC63LVDM83A
7033	8238 277 05310	IC LM2596SX-3.3
7201	9322 141 05685	IC LM61CIM3X 3P
7301	9322 046 99668	IC ST24FC21M6 SO-8P
7331	8238 277 05690	IC TL3016ID
7401	9322 151 11687	IC PQ3DZ13U 5P
7403	8238 277 05400	IC AD9884AKS-140
7501	8238 277 05670	IC SII161A
7601	9352 671 13557	IC SAA6721
7602	8238 277 05680	IC 74AHC1G125DCK
7631	8238 277 05880	MTV130P-15
7651	8238 277 05720	SDRAMX16M-ESMT
7121	9322 130 28682	IC L5991 16P
⚠7150	9322 140 14667	PHOTOCOUPLER TCET1103G 4P
7151	9337 711 00686	IC TL431CLPRP 3P
7922	9351 861 60112	IC TDA7053A/N2 16P
7941	9322 142 63667	IC PQ1CF2 5P
7204	9322 126 62682	IC M24C16-BN6 8P
7202	8238 277 05660	MUX 74CBT3257
7901	9322 091 05668	MOSFET SI4435
601	3138 117 02470	E-D.F.U. ASSY-180P
8159	8238 277 06230	LG CABLE

Spare Parts List

Model: 180P1L/00

Item	Code number	Description
450	3138 156 30060	CARTON
451	3138 156 30070	FORM SHEET (FRONT)
452	3138 156 30080	FORM SHEET (BACK)
453	3138 156 20800	P.E.BAG-ANTI-STAT.
454	1222 100 33005	ADHESIVE TAPE 19 M/M
455	1238 100 78007	ADH TAPE PET 0.065X75MM
456	1238 100 78008	ADH TAPE PETP 0,065X75MM
1	3138 155 20460	QUICK SETUP GUIDE-180P
2	3138 155 20350	MANUAL-USING YOUR MONITOR
1	3138 154 00580	BASE - BOTTOM
2	3138 151 30250	COUNTER WEIGHT
3	3138 104 50160	RUBBER PAD
1	3138 154 01660	MID-BUCKET
2	3138 151 30530	MOUNTING PAD
3	3138 155 50930	STICKER-AUDIO
4	3138 151 30980	REINFORCED PLATE
1	3138 154 01670	CHIN
2	3138 154 01750	LENS - POWER
3	3138 154 01680	KNOB-CONTROL-W/AUDIO
4	3138 100 41380	SCREW PH K30X8 PT
5	3138 151 60500	SPRING-POWER KNOB
6	3138 154 02100	POWER KNOB
1	3138 151 30790	METAL FRAME-LG
2	3138 151 60380	CLIP
1	3138 151 31030	HEAT SINK
2	2538 163 55025	TAPPING SCREW 3 X 8
3	3138 151 30810	SHIELD-MAIN PCB
1	3138 151 60320	HEAT SINK
2	3122 121 24785	SPRING
4	3138 103 21730	INSULATING PLATE (16X31)
1	3138 103 53280	MAIN PCB - MULTI
5	3138 155 50560	PRODUCT TRACEABILITY LABEL
34	3138 153 20240	THERMAL CONDUCTIVITY
41	0638 995 00005	60/40 NRG SOLDER WR 0.05
42	0611 059 00002	EXTRUDED BAR
43	1322 511 49002	ISOPROPANOL COLOURLESS
44	1322 526 43001	FLUX SOLD ALPHA RF800 B
1	3138 103 53600	CONTROL PCB - MULTI
41	0638 995 00005	60/40 NRG SOLDER WR 0.05
42	0611 059 00002	EXTRUDED BAR
43	1322 511 49002	ISOPROPANOL COLOURLESS
44	1322 526 43001	FLUX SOLD ALPHA RF800 B
1	3138 103 53900	AC ADAPTOR PCB - MULTI
7	3138 101 30870	SPRING (FUSE HOLDER)
30	1238 100 78004	GLUE JETMELT 3748-VO-TC
35	3138 101 66850	STC PIN
36	3138 101 66900	TERMINAL
41	0638 995 00005	60/40 NRG SOLDER WR 0.05
42	0611 059 00002	EXTRUDED BAR
43	1322 511 49002	ISOPROPANOL COLOURLESS
44	1322 526 43001	FLUX SOLD ALPHA RF800 B
1	3138 103 53700	AUDIO PCB - MULTI
33	3138 101 28400	HEAT SINK AUDI0
41	0638 995 00005	60/40 NRG SOLDER WR 0.05
42	0611 059 00002	EXTRUDED BAR
43	1322 511 49002	ISOPROPANOL COLOURLESS
44	1322 526 43001	FLUX SOLD ALPHA RF800 B
1	3138 155 50970	LABEL
1	3138 155 50970	LABEL
1	3138 151 60560	HEAT SINK
2	3122 121 24785	SPRING
3	1322 504 97401	SILICON GREASE DC4
4	3138 103 22510	INSULATING PLATE
5	3138 100 41390	SCREW M3-0.5X12
1	3138 154 02230	BEZEL-180P
3	3138 157 50780	MID-BUCKET ASSY
4	3138 157 50790	CHIN ASSY
9	3138 100 40330	SCREW W/WASHER M4X12
13	2538 163 55025	TAPPING SCREW 3 X 8
16	3138 154 00600	CAP
18	3138 154 01280	REAR DOOR
20	3138 154 00570	BASE - TOP
21	3138 157 50220	BASE BOTTOM ASSY
22	3138 154 00620	USB COVER - W/O-USB

Item	Code number	Description
23	3138 151 30290	SHIELD-BASE
24	3138 100 41530	SCREW W/WASHER M3X14
32	3138 100 41510	SCREW (PH K40X12PT)
33	3138 151 60570	HINGE PIVOT
34	3138 100 41370	SCREW M5-0.8X16
36	3138 157 50970	METAL FRAME ASSY-LG
37	3138 157 50980	SHIELD ASSY-MPCB
40	3138 100 41380	SCREW PH K30X8 PT
41	3138 151 30840	CONTACT SPRING-TOP
43	3138 151 30970	CONTACT SPRING-R/L
47	3138 153 20220	INSULATING PLATE
126	3138 155 50960	RATING LABEL
128	3138 106 32610	P.E. BAG
131	2822 062 40595	INK CARTRIDGE - EP-T
133	3138 106 36800	PROTECTIVE BAG
134	2838 062 90083	RUBBER BAND
137	3138 105 84750	LABEL - MAINS CORD
138	3138 106 00350	FAMILY SHEET
139	3138 153 20070	EXSICCATOR
140	3138 155 51060	PLASTIC COVER
6151	9322 143 37687	DIODE 150V 20A
1002	2438 031 00404	CON BM SUPPH 1P F 16V 3A B
1003	2438 031 00344	10P WAFER 2011P11H000
1004	2422 086 10929	FUSE SM SSQ F 5.0A 125V R
1005	8238 277 05370	HEAD-2.54-2X2
1012	8238 277 05760	CON20
1013	3138 168 72390	CON. 5P-WAFER
1201	3138 168 72070	11P WAFER M242611-V
1202	2438 031 00343	HEADER 1X3
1205	8238 277 06220	HEAD-2.54-4X1
1220	2438 543 00067	XTAL 24MHZ
1261	8238 277 05380	ELOCO-2011P08V000
1301	2038 031 00416	D-SUB DHSL-15UKL4
1302	3138 168 77120	CON. MOLEX 74320-4004 DVI
1391	3138 158 51730	EEPROM IC ASSY(7204)
1392	3138 158 51740	CPU WITH PROGRAM ASSY(7203)
1601	8238 277 06410	27MHZ/OSC/SMD
2002	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2005	2222 591 16641	CER2 1206 X7R 63V 100N PM10 R
2006	2222 591 16641	CER2 1206 X7R 63V 100N PM10 R
2011	2038 035 00309	ELCAP 470U/25V/SC TYPE
2012	2038 035 00309	ELCAP 470U/25V/SC TYPE
2013	2222 590 18814	MLCC 0805 Y5V 220N 4B 9
2014	2222 590 18814	MLCC 0805 Y5V 220N 4B 9
2015	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2016	2038 035 00309	ELCAP 470U/25V/SC TYPE
2017	2222 590 18814	MLCC 0805 Y5V 220N 4B 9
2018	2222 241 19876	SMD 1206 Y5V 10U 10V
2019	2222 241 19876	SMD 1206 Y5V 10U 10V
2021	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2022	2038 035 00309	ELCAP 470U/25V/SC TYPE
2023	2222 241 19876	SMD 1206 Y5V 10U 10V
2024	2222 590 18814	MLCC 0805 Y5V 220N 4B 9
2025	2038 035 00309	ELCAP 470U/25V/SC TYPE
2026	2038 035 00309	ELCAP 470U/25V/SC TYPE
2027	2222 590 18814	MLCC 0805 Y5V 220N 4B 9
2031	2038 035 00309	ELCAP 470U/25V/SC TYPE
2032	2038 035 00309	ELCAP 470U/25V/SC TYPE
2035	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2036	2038 035 00309	ELCAP 470U/25V/SC TYPE
2040	2222 590 18814	MLCC 0805 Y5V 220N 4B 9
2201	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2202	2020 024 90163	ELCAP SM WX 16V 10U
2203	2020 024 90163	ELCAP SM WX 16V 10U
2204	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2205	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2206	2222 241 19876	SMD 1206 Y5V 10U 10V
2207	2020 024 90163	ELCAP SM WX 16V 10U
2208	2222 861 12229	MLCC 0805 NP0 22P J 50V 4B 9 R
2209	2222 861 12229	MLCC 0805 NP0 22P J 50V 4B 9 R
2210	2222 861 12101	CER1 0805 NPO 50V 100P PM5
2211	2222 861 12101	CER1 0805 NPO 50V 100P PM5
2212	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2220	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10

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Model: 180P1L/00

Item	Code number	Description
2221	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2222	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2223	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2224	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2225	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2226	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2227	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2228	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2229	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2230	2238 580 16627	CER2 0805 X7R 50V 10N PM10 R
2231	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2232	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2233	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2234	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2235	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2236	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2237	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2238	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2240	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2241	2020 024 90164	ELCAP SM WX 16V 47U
2242	2020 024 90164	ELCAP SM WX 16V 47U
2243	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2244	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2245	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2261	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2262	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2263	2222 780 19763	CMC 0805 Y5V 1U M 16V
2301	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2302	2222 861 12101	CER1 0805 NPO 50V 100P PM5
2303	2222 861 12101	CER1 0805 NPO 50V 100P PM5
2304	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2305	2222 861 12109	SMD0805NPO 10P 50V +/-5%
2306	2222 861 12109	SMD0805NPO 10P 50V +/-5%
2310	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2311	2222 861 12101	CER1 0805 NPO 50V 100P PM5
2312	2222 861 12101	CER1 0805 NPO 50V 100P PM5
2313	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2314	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2331	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2332	2222 241 19876	SMD 1206 Y5V 10U 10V
2333	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2401	2222 241 19876	SMD 1206 Y5V 10U 10V
2402	2020 024 90164	ELCAP SM WX 16V 47U
2403	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2404	2222 241 19876	SMD 1206 Y5V 10U 10V
2405	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2406	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2407	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2408	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2409	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2410	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2411	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2412	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2413	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2416	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2423	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2424	2222 241 19876	SMD 1206 Y5V 10U 10V
2425	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2427	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2428	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2429	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2431	2238 910 16645	CAP 47NF SMD 0805 X7R
2432	2238 910 16645	CAP 47NF SMD 0805 X7R
2433	2238 910 16645	CAP 47NF SMD 0805 X7R
2436	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2437	2238 580 16622	CAP SMD 0805 3N9F X7R
2438	2238 580 15644	CMC CAP 0805 X7R 39N K 50V T
2439	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2440	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2441	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2442	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2443	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2444	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2445	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2446	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2447	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2448	2020 024 90164	ELCAP SM WX 16V 47U
2501	2238 861 15471	CMC 0805 NPO 470P 50V J
2502	2238 861 15471	CMC 0805 NPO 470P 50V J
2503	2238 861 15471	CMC 0805 NPO 470P 50V J
2504	2238 861 15471	CMC 0805 NPO 470P 50V J
2505	2238 861 15471	CMC 0805 NPO 470P 50V J
2506	2238 861 15471	CMC 0805 NPO 470P 50V J
2507	2238 861 15471	CMC 0805 NPO 470P 50V J
2508	2238 861 15471	CMC 0805 NPO 470P 50V J
2509	2238 861 15471	CMC 0805 NPO 470P 50V J
2510	2238 861 15471	CMC 0805 NPO 470P 50V J
2511	2238 861 15471	CMC 0805 NPO 470P 50V J
2513	2222 241 19876	SMD 1206 Y5V 10U 10V
2514	2238 580 16627	CER2 0805 X7R 50V 10N PM10 R
2515	2238 861 15471	CMC 0805 NPO 470P 50V J
2516	2238 861 15471	CMC 0805 NPO 470P 50V J
2517	2222 241 19876	SMD 1206 Y5V 10U 10V
2519	2222 241 19876	SMD 1206 Y5V 10U 10V
2601	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2602	2222 241 19876	SMD 1206 Y5V 10U 10V
2603	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2604	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2605	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2606	2222 861 12101	CER1 0805 NPO 50V 100P PM5
2607	2222 861 12101	CER1 0805 NPO 50V 100P PM5
2608	2222 861 12229	MLCC 0805 NP0 22P J 50V 4B 9 R
2609	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2610	2222 241 19876	SMD 1206 Y5V 10U 10V
2611	2238 861 15471	CMC 0805 NPO 470P 50V J
2612	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2613	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2614	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2615	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2616	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2617	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2618	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2619	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2620	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2621	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2622	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2623	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2624	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2631	2222 780 19763	CMC 0805 Y5V 1U M 16V
2632	2222 780 19763	CMC 0805 Y5V 1U M 16V
2643	2222 590 18814	MLCC 0805 Y5V 220N 4B 9
2646	8238 277 05361	47U/25V/RV2 0605
2651	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2652	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2653	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2654	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2655	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2656	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2657	2222 241 19876	SMD 1206 Y5V 10U 10V
2658	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2659	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2660	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2661	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2662	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2663	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2664	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2665	2222 241 19876	SMD 1206 Y5V 10U 10V
2666	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2667	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2668	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2669	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2670	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2671	2222 590 16641	MLCC 0805 X7R 100N K 50V PM10
2672	2222 241 19876	SMD 1206 Y5V 10U 10V
2901	2020 024 90164	ELCAP SM WX 16V 47U
2902	2020 024 90164	ELCAP SM WX 16V 47U
2903	2222 780 19763	CMC 0805 Y5V 1U M 16V
2904	2020 024 90164	ELCAP SM WX 16V 47U
2905	2020 024 90164	ELCAP SM WX 16V 47U
3001	2322 730 61124	RES 120K 0805 SMD

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Item	Code number	Description
3002	2322 730 61183	RST SM 0805 RC 11 18K PM5 R
3011	2322 730 61478	RST SM 0805 RC11 4R7 PM5 R
3012	2322 730 61478	RST SM 0805 RC11 4R7 PM5 R
3013	2322 730 61103	RES 10K RC-11 SMD 0805 T
3014	2322 730 61103	RES 10K RC-11 SMD 0805 T
3028	2322 730 61103	RES 10K RC-11 SMD 0805 T
3030	2322 730 61103	RES 10K RC-11 SMD 0805 T
3117	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3118	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3201	2322 730 61222	RST SM 0805 RC11 2K2 PM5 R
3202	2322 730 61222	RST SM 0805 RC11 2K2 PM5 R
3203	2322 730 61104	RES 100K RC-11 SMD 0805 T
3204	2350 035 10472	ARV 241 4K7 5%
3206	2322 730 61104	RES 100K RC-11 SMD 0805 T
3207	2322 730 61122	RST SMC 0805 RC11 1K2 PM5 T
3208	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3209	2322 730 61333	RES 33K 0805 SMD
3212	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3213	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3215	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3216	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3217	2322 730 61103	RES 10K RC-11 SMD 0805 T
3218	2322 730 61105	RES 1M RC-11 SMD 0805 T
3219	2322 730 61229	RST SM 0805 RC11 22R PM5 R
3220	2350 035 10102	RES 1K/ARV241
3221	2350 035 10101	RES 100R/ARV241
3222	2322 730 61103	RES 10K RC-11 SMD 0805 T
3225	2322 730 61153	RST SM 0805 RC11 15K PM5 R
3226	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3227	2322 730 61472	RST SM 0805 RC11 4K7 PM5 R
3228	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3229	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3230	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3231	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3235	2322 730 61331	RST SM 0805 RC11 330R PM5 T
3236	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3237	2322 730 61302	RST SM 0805 RC11 3K0 PM5 R
3238	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3239	2322 730 61182	RES 1K8 0805 SMD
3240	2322 730 61272	RES 2K7 0805 SMD
3241	2322 730 61153	RST SM 0805 RC11 15K PM5 R
3242	2322 730 61911	RST SMC 0805 RC11 910R PM5 T
3243	2322 730 61822	RST SM 0805 RC11 8K2 PM5 R
3244	2322 730 61622	RES 6K2 0805 SMD
3245	2322 730 61103	RES 10K RC-11 SMD 0805 T
3246	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3247	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3248	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3261	2322 730 61221	RES 220R 0805 SMD RC-11 T
3262	2322 730 61103	RES 10K RC-11 SMD 0805 T
3264	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3301	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3302	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3303	2322 730 61109	RES 10R 0805 SMD
3304	2322 730 61103	RES 10K RC-11 SMD 0805 T
3305	2322 730 61222	RST SM 0805 RC11 2K2 PM5 R
3306	2322 730 61222	RST SM 0805 RC11 2K2 PM5 R
3307	2322 730 61759	RST SM 0805 RC11 75R PM5 T
3308	2322 730 61759	RST SM 0805 RC11 75R PM5 T
3309	2322 730 61759	RST SM 0805 RC11 75R PM5 T
3310	2322 730 61331	RST SM 0805 RC11 330R PM5 T
3311	2322 730 61331	RST SM 0805 RC11 330R PM5 T
3312	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3313	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3314	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3315	2350 035 10109	ARV 241 10R 5%
3316	2350 035 10109	ARV 241 10R 5%
3317	2322 730 61222	RST SM 0805 RC11 2K2 PM5 R
3318	2322 730 61109	RES 10R 0805 SMD
3319	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3320	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3321	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3322	2322 730 61103	RES 10K RC-11 SMD 0805 T
3323	2322 730 61103	RES 10K RC-11 SMD 0805 T
3324	2322 730 61103	RES 10K RC-11 SMD 0805 T

Item	Code number	Description
3325	2322 730 61471	RST SM 0805 RC11 470R PM5 R
3326	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3327	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3328	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3329	2322 730 61103	RES 10K RC-11 SMD 0805 T
3330	2322 730 61103	RES 10K RC-11 SMD 0805 T
3331	2322 730 61562	RES 5.6K RC-11 SMD 0805 T
3332	2322 730 61562	RES 5.6K RC-11 SMD 0805 T
3333	2322 730 61479	RES 47R 0805 SMD RC-11 T
3335	2322 730 61103	RES 10K RC-11 SMD 0805 T
3402	2322 730 61103	RES 10K RC-11 SMD 0805 T
3403	2322 730 61151	RST SM 0805 RC11 150R PM5 R
3404	2322 730 61151	RST SM 0805 RC11 150R PM5 R
3405	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
3409	2322 730 61103	RES 10K RC-11 SMD 0805 T
3410	2322 730 61332	RES 3K3 0805 SMD
3412	2350 035 10101	RES 100R/ARV241
3413	2350 035 10101	RES 100R/ARV241
3414	2350 035 10101	RES 100R/ARV241
3415	2350 035 10101	RES 100R/ARV241
3416	2350 035 10101	RES 100R/ARV241
3417	2350 035 10101	RES 100R/ARV241
3418	2350 035 10101	RES 100R/ARV241
3419	2350 035 10101	RES 100R/ARV241
3420	2350 035 10101	RES 100R/ARV241
3421	2350 035 10101	RES 100R/ARV241
3422	2350 035 10101	RES 100R/ARV241
3423	2350 035 10101	RES 100R/ARV241
3425	2322 730 61339	RES 33R 0805 SMD RC-11 T
3427	2322 730 61339	RES 33R 0805 SMD RC-11 T
3501	2322 730 61479	RES 47R 0805 SMD RC-11 T
3502	2322 730 61479	RES 47R 0805 SMD RC-11 T
3503	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3504	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3505	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3506	2322 730 61103	RES 10K RC-11 SMD 0805 T
3507	2322 730 61103	RES 10K RC-11 SMD 0805 T
3508	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3509	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3510	2322 730 61103	RES 10K RC-11 SMD 0805 T
3511	2322 730 61471	RST SM 0805 RC11 470R PM5 R
3512	2322 730 61103	RES 10K RC-11 SMD 0805 T
3515	2350 035 10479	ARV241 47R PM5
3516	2350 035 10479	ARV241 47R PM5
3517	2350 035 10479	ARV241 47R PM5
3518	2350 035 10479	ARV241 47R PM5
3519	2350 035 10479	ARV241 47R PM5
3520	2350 035 10479	ARV241 47R PM5
3521	2350 035 10479	ARV241 47R PM5
3522	2350 035 10479	ARV241 47R PM5
3523	2350 035 10479	ARV241 47R PM5
3524	2350 035 10479	ARV241 47R PM5
3525	2350 035 10479	ARV241 47R PM5
3526	2350 035 10479	ARV241 47R PM5
3601	2350 035 10229	RES 22R/ARV241
3602	2350 035 10229	RES 22R/ARV241
3603	2350 035 10229	RES 22R/ARV241
3604	2350 035 10229	RES 22R/ARV241
3605	2350 035 10229	RES 22R/ARV241
3606	2350 035 10229	RES 22R/ARV241
3607	2350 035 10229	RES 22R/ARV241
3608	2350 035 10229	RES 22R/ARV241
3609	2350 035 10229	RES 22R/ARV241
3610	2350 035 10229	RES 22R/ARV241
3611	2350 035 10229	RES 22R/ARV241
3612	2350 035 10229	RES 22R/ARV241
3614	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3615	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3616	2322 730 61229	RST SM 0805 RC11 22R PM5 R
3617	2350 035 10229	RES 22R/ARV241
3618	2350 035 10229	RES 22R/ARV241
3619	2350 035 10229	RES 22R/ARV241
3620	2350 035 10229	RES 22R/ARV241
3621	2350 035 10229	RES 22R/ARV241
3623	2322 730 61229	RST SM 0805 RC11 22R PM5 R

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Item	Code number	Description
3632	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3633	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3634	2350 035 10102	RES 1K/ARV241
3635	2350 035 91001	ARV 241 0R
3636	2350 035 10103	RES 10K/ARV241
3641	2322 730 61101	RST SM 0805 RC11 100R PM5 R
3901	2322 730 61102	RST SMC 0805 RC11 1K PM5 T
5001	2422 549 43931	IND FXD LINE FIL 50V 4A R
5002	8238 277 05350	DRUM CHOKE 68UH/3A
5003	8238 277 05350	DRUM CHOKE 68UH/3A
5004	2422 535 94969	3A CHOKE
5005	2422 535 94969	3A CHOKE
5012	2422 549 42103	BLM21B222SB-0805 SMD
5013	2422 549 42103	BLM21B222SB-0805 SMD
5016	2422 549 42103	BLM21B222SB-0805 SMD
5017	2422 549 42103	BLM21B222SB-0805 SMD
5018	2422 549 42103	BLM21B222SB-0805 SMD
5019	2422 549 42103	BLM21B222SB-0805 SMD
5020	2422 549 42103	BLM21B222SB-0805 SMD
5021	2422 549 42103	BLM21B222SB-0805 SMD
5032	8238 277 05350	DRUM CHOKE 68UH/3A
5034	2422 535 94969	3A CHOKE
5201	2422 549 43409	BEAD BLM31P500S
5202	2422 549 42103	BLM21B222SB-0805 SMD
5203	2422 549 42103	BLM21B222SB-0805 SMD
5204	2422 549 42103	BLM21B222SB-0805 SMD
5205	2422 549 42103	BLM21B222SB-0805 SMD
5206	2422 549 42103	BLM21B222SB-0805 SMD
5207	2422 549 42103	BLM21B222SB-0805 SMD
5208	2422 549 42103	BLM21B222SB-0805 SMD
5209	2422 549 42103	BLM21B222SB-0805 SMD
5210	2422 549 42103	BLM21B222SB-0805 SMD
5220	2422 549 43409	BEAD BLM31P500S
5221	2422 549 43409	BEAD BLM31P500S
5230	2422 549 42103	BLM21B222SB-0805 SMD
5331	2422 549 43409	BEAD BLM31P500S
5401	2422 549 43409	BEAD BLM31P500S
5402	2422 549 43409	BEAD BLM31P500S
5403	2422 549 43409	BEAD BLM31P500S
5501	2422 549 43409	BEAD BLM31P500S
5502	2422 549 43409	BEAD BLM31P500S
5503	2422 549 43409	BEAD BLM31P500S
5601	2422 549 43409	BEAD BLM31P500S
5602	2422 549 43409	BEAD BLM31P500S
5603	2422 549 43409	BEAD BLM31P500S
5631	2422 549 43409	BEAD BLM31P500S
5632	2422 549 43409	BEAD BLM31P500S
5640	2422 549 42103	BLM21B222SB-0805 SMD
5651	2422 549 43409	BEAD BLM31P500S
6003	9322 082 82668	DIODE STP S34 3A40V
6004	9322 082 82668	DIODE STP S34 3A40V
6033	9322 082 82668	DIODE STP S34 3A40V
6201	9339 139 10115	SMD DIODE BAS32L
6202	9339 139 10115	SMD DIODE BAS32L
6301	9332 153 70215	SMD DIODE BAV99
6302	9332 153 70215	SMD DIODE BAV99
6303	9332 153 70215	SMD DIODE BAV99
6304	9332 153 70215	SMD DIODE BAV99
6305	9332 153 70215	SMD DIODE BAV99
6306	9332 153 70215	SMD DIODE BAV99
6307	9332 153 70215	SMD DIODE BAV99
6308	9332 153 70215	SMD DIODE BAV99
6309	9339 139 10115	SMD DIODE BAS32L
6310	9339 139 10115	SMD DIODE BAS32L
6311	9332 153 70215	SMD DIODE BAV99
6312	9332 153 70215	SMD DIODE BAV99
6313	9332 153 70215	SMD DIODE BAV99
6314	9332 153 70215	SMD DIODE BAV99
6315	9332 153 70215	SMD DIODE BAV99
6316	9332 153 70215	SMD DIODE BAV99
6317	9332 153 70215	SMD DIODE BAV99
6318	9332 153 70215	SMD DIODE BAV99
6319	9332 153 70215	SMD DIODE BAV99
6320	9339 139 10115	SMD DIODE BAS32L
6321	9332 153 70215	SMD DIODE BAV99

Item	Code number	Description
6322	9332 153 70215	SMD DIODE BAV99
6324	9339 139 10115	SMD DIODE BAS32L
7001	9322 028 99668	30V(D-S) MOSFET SI4835
7002	9335 083 80215	TRANS. BSR14 SOT-23 T
7003	8238 277 05300	IC LM2596SX-5.0
7006	9322 158 38668	IC REGULATOR LM2596S-12
7012	8238 277 05000	IC THC63LVDM83A
7013	8238 277 05000	IC THC63LVDM83A
7033	8238 277 05310	IC LM2596SX-3.3
7201	9322 141 05685	IC LM61CIM3X 3P
7202	8238 277 05660	MUX 74CBT3257
7210	3198 010 42201	TRANS BC858C (UAW)
7211	3198 010 43361	SMD TRANS PMBT2369
7212	3198 010 43361	SMD TRANS PMBT2369
7213	3198 010 42081	TRANS BC848C (UAW)
7214	3198 010 42201	TRANS BC858C (UAW)
7215	3198 010 42201	TRANS BC858C (UAW)
7216	3198 010 43361	SMD TRANS PMBT2369
7218	3198 010 42201	TRANS BC858C (UAW)
7261	9335 083 80215	TRANS. BSR14 SOT-23 T
7301	9322 046 99668	IC ST24FC21M6 SO-8P
7302	9322 046 99668	IC ST24FC21M6 SO-8P
7303	3198 010 42081	TRANS BC848C (UAW)
7331	8238 277 05690	IC TL3016ID
7401	9322 151 11687	IC PQ3DZ13U 5P
7403	8238 277 05400	IC AD9884AKS-140
7405	9322 092 65685	TRAN MUN2211
7501	8238 277 05670	IC SII161A
7502	9322 092 65685	TRAN MUN2211
7601	9352 671 13557	IC SAA6721
7602	8238 277 05680	IC 74AHC1G125DCK
7631	8238 277 05880	MTV130P-15
7651	8238 277 05720	SDRAMX16M-ESMT
7652	8238 277 05720	SDRAMX16M-ESMT
7653	8238 277 05720	SDRAMX16M-ESMT
7901	9322 091 05668	MOSFET SI4435
7902	9322 091 05668	MOSFET SI4435
1901	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1902	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1903	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1904	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1905	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1906	2438 128 00197	SWI TACT H 5 RD 260G SKHHAR B
1908	2422 128 02864	SWI PUSH ESB64623
1909	3138 168 75180	5 PIN WAFER A2502WR2-5 P-2.5MM
1910	3138 168 75200	11PIN WAFER A2502WR2-11 2.5MM
2901	2238 910 16649	MLCC 0805 X7R 25V 100N K R
3901	2322 730 61152	RST SM 0805 RC11 1K5 PM5 R
3902	2322 730 61332	RES 3K3 0805 SMD
3903	2322 730 61103	RES 10K RC-11 SMD 0805 T
3904	2322 730 61153	RST SM 0805 RC11 15K PM5 R
3905	2322 730 61393	RES 39K RC-11 SMD 0805 T
3906	2322 730 61683	RES 68K RC-11 SMD 0805 T
3910	2322 730 61221	RES 220R 0805 SMD RC-11 T
6901	9322 146 03682	LED L-3WYGW
6902	9332 153 70215	SMD DIODE BAV99
⚠1101	3138 178 78620	AC - INLET ASSY
⚠1102	2422 086 10239	FUSE HRC T3.15AH/250V S
1151	2438 025 00238	WAFER 2P
1161	2438 031 00303	CON BM H 8P F2.54 ES B
1162	3138 158 50530	DIODE ASSY 6151
1163	3138 158 51750	MOS ASSY 7102/6101
2101	2252 812 39427	CERSAF DN 250V S 4N7 PM20 B
2102	2252 812 39427	CERSAF DN 250V S 4N7 PM20 B
2103	2038 301 00413	ACROSS LINE CAP 275V 680N PM20
2104	2038 310 00009	X2 CAP MKP 250V/275V 47N PM10
2105	8238 277 04880	ELCAP LZK 400V S 220U PM20 B
2108	2252 608 12421	CER CAP X7R 500V 4N7 K 2E B
2113	2252 601 08116	CERC 150P 1KV X7R 2E
2115	2038 031 65109	ELCAP VT 50V 10UF PM20 2E
2116	2252 608 08021	CERC DC X7R 500V 1N0 PM10 A
2121	2238 910 16649	MLCC 0805 X7R 25V 100N K R
2122	2038 031 55101	ELCAP S 35V 100UF PM20 2E
2123	2238 861 15331	CAP 330PF 0805 SMD NPO
2124	2222 590 16619	SMD0805X7R 2N7 50V +/-10%

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2125	2252 325 26104	MU-LAYER CER CAP 50V 100N X7R
2126	2238 580 16622	CAP SMD 0805 3N9F X7R
2127	2222 590 16621	MLCC 0805 X7R 3N3 K 4B 9
2150	8238 277 01460	CAP 220P 250V AC Y1
2151	2020 557 90151	CERC DC 500V 1N0 PM10
2152	2038 035 00303	ELCAP SX 3300U 25V 16*36 M B
2153	2038 035 00303	ELCAP SX 3300U 25V 16*36 M B
2154	2038 031 55101	ELCAP S 35V 100UF PM20 2E
2155	2038 031 65109	ELCAP VT 50V 10UF PM20 2E
2156	2238 580 16623	MLCC 0805 X7R 4N7F K 4B 9
2157	2222 861 12479	MLCC 0805 NPO 50V 47P COL R
⚠3101	2322 207 33221	RST NFR25H 220R PM5
⚠3102	2322 207 33221	RST NFR25H 220R PM5
3103	2138 660 00027	NTC DC SCK-104 S 10R PM15
3104	2322 242 13684	METGLAZ RST A VR37 680K PM5
3105	2322 711 61474	RST SM 1206 RC01 470K PM5 R
3106	2322 711 61394	RST SM 1206 RC01 390K PM5 R
3107	2138 101 13474	RST CRB CR12 A 470K PM5 A
3108	2138 105 00205	RES 5W 15K RSM
3109	2138 101 13102	RST CRB CR12 A 1K PM5 A
3110	2138 105 00213	RSS 1W 0.27R
3111	2138 105 00209	RST MOX 1W RSS S 39K PM5
3112	2138 101 13472	RST CRB CR12 A 4K7 PM5 A
3113	2138 105 00206	TST MOX5W RSM5WL 2K2
⚠3115	2322 207 33228	RST FUSE NFR25H 2R2 PM5
3116	2120 105 92462	RST MOX 1W RSS S 56K PM5 B
3117	2138 101 13159	RST CRB CR12 A 15R PM5 A
3120	2322 730 61224	RST SMD 0805 RC11 220K PM5 R
3121	2322 734 61503	SMD RST 0805 15K PM1
3122	2322 730 61332	RES 3K3 0805 SMD
3123	2322 730 61103	RES 10K RC-11 SMD 0805 T
3124	2322 730 61103	RES 10K RC-11 SMD 0805 T
3125	2322 730 61911	RST SMC 0805 RC11 910R PM5 T
3126	2322 730 61151	RST SM 0805 RC11 150R PM5 R
3127	2138 116 11002	RST MFLM MF50S A 1K PM1 A
3128	2322 730 91002	RST SM 0805 JUMP. MAX 0R05 T
3150	2138 116 12402	RST MFLM MF50S A 2K4 PM1 A
3151	2120 101 28339	CARBRST COMP 1/2W 33R PM10 T
3152	2138 116 11003	RST MFLM MF50S A 10K PM1 A
3155	2322 730 61103	RES 10K RC-11 SMD 0805 T
3156	2138 101 13153	RST CRB CR12 A 15K PM5 A
3157	2322 730 61153	RST SM 0805 RC11 15K PM5 R
3158	2322 734 66804	SMD RES 0805 680K PM1
3161	2322 730 61242	RES 2K4 RC-11 SMD 0805 T
⚠5101	3138 168 73610	LINE FILTER (HJC-K8259)
5102	3138 108 72620	BAR COIL 7U5H PM10
5103	3138 108 72620	BAR COIL 7U5H PM10
5111	2422 549 43922	BEAD (ACC 3216L/500/T)
5112	2438 535 98025	IND FXD BEAD EMI 100MHZ 60R R
5113	2422 549 43922	BEAD (ACC 3216L/500/T)
5114	2422 549 43922	BEAD (ACC 3216L/500/T)
⚠5150	3138 168 72460	TR-EE35L
5151	3138 178 74570	COIL 4U7(54A-7076C)
5155	2438 535 98025	IND FXD BEAD EMI 100MHZ 60R R
6111	9334 979 50683	DIODE RGP10J (GI)
6112	9337 037 00133	DIO REC BYV26E A A
6113	9334 979 50683	DIODE RGP10J (GI)
6117	9334 979 50683	DIODE RGP10J (GI)
6118	9337 516 60683	DIODE RGP10D (GI)
6153	9333 882 90215	DIODE BZX84C-20V
6158	9339 139 10115	SMD DIODE BAS32L
7121	9322 130 28682	IC L5991 16P
⚠7150	9322 140 14667	PHOTOCOUPLER TCET1103G 4P
7151	9337 711 00686	IC TL431CLPRP 3P
7152	9338 268 50126	TRANS BT169B T
1930	8238 277 05570	EARPHONE JACK
1931	3138 168 72100	4P WAFER (63364)
1933	3138 168 72010	CON. M2426R
1934	2438 031 00317	CON BM PHONE H 1P F 3.5 ST B
1935	3138 168 77270	5P WAFER
1936	2438 031 00317	CON BM PHONE H 1P F 3.5 ST B
2922	2038 035 50215	CAP VR 1000U 10V 10125 T
2923	2238 780 19858	CER2 0805 Y5V 16V 470N P8020 R
2924	2238 780 19858	CER2 0805 Y5V 16V 470N P8020 R
2925	2038 034 53339	ELCAP S 16V 33UF PM20 2E T

Item	Code number	Description
2926	2038 302 50212	POLCAP 100V 100N PM5 2E T
2927	2038 302 50212	POLCAP 100V 100N PM5 2E T
2929	2238 861 15331	CAP 330PF 0805 SMD NPO
2930	2238 861 15331	CAP 330PF 0805 SMD NPO
2932	2222 580 16638	CMC 0805 X7R 68N K 50V 3B 9
2933	2038 035 00037	ELCAP SM 16V 47U PM20 2E T
2934	2222 781 19867	MLCC 1206 Y5V 2U2 Z 3B 7
2936	2238 580 16614	CER2 0805 X7R 50V 1N PM10
2937	2238 580 16614	CER2 0805 X7R 50V 1N PM10
2938	2038 034 53101	ELCAP S 16V 100UF PM20 2E
2940	2238 910 16649	MLCC 0805 X7R 25V 100N K R
2941	2238 910 16649	MLCC 0805 X7R 25V 100N K R
2942	2038 034 54479	ELCAP S 25V 47UF PM20 2E T
2943	2222 590 16621	MLCC 0805 X7R 3N3 K 4B 9
2944	8238 277 04050	ELCAP 470U/25V/SC TYPE
2946	2238 910 16649	MLCC 0805 X7R 25V 100N K R
3921	2322 730 61221	RES 220R 0805 SMD RC-11 T
3922	2322 730 61223	RES 22K 0805 SMD
3923	2322 730 61223	RES 22K 0805 SMD
3924	2322 730 61563	RES 56K 0805 SMD
3925	2322 730 61153	RST SM 0805 RC11 15K PM5 R
3926	2322 730 61683	RES 68K RC-11 SMD 0805 T
3927	2322 730 61103	RES 10K RC-11 SMD 0805 T
3928	2322 730 61683	RES 68K RC-11 SMD 0805 T
3929	2322 730 61822	RST SM 0805 RC11 8K2 PM5 R
3930	2322 730 61822	RST SM 0805 RC11 8K2 PM5 R
3931	2322 730 61103	RES 10K RC-11 SMD 0805 T
3932	2138 112 73109	CARBRST FLM CR25 10R PM5
3933	2138 112 73109	CARBRST FLM CR25 10R PM5
3934	2322 730 61122	RST SMC 0805 RC11 1K2 PM5 T
3935	2322 730 61562	RES 5.6K RC-11 SMD 0805 T
3936	2322 730 61332	RES 3K3 0805 SMD
3937	2322 730 61759	RST SM 0805 RC11 75R PM5 T
3938	2322 730 61122	RST SMC 0805 RC11 1K2 PM5 T
3939	2322 730 61108	SMD RES 0805 1R
3940	2322 730 61103	RES 10K RC-11 SMD 0805 T
3941	2322 730 61682	RES 6K8 0805 SMD
3942	2322 730 61152	RST SM 0805 RC11 1K5 PM5 R
3943	2322 730 61103	RES 10K RC-11 SMD 0805 T
3944	2322 730 61822	RST SM 0805 RC11 8K2 PM5 R
3945	2322 730 61759	RST SM 0805 RC11 75R PM5 T
5931	2422 549 42103	BLM21B222SB-0805 SMD
5932	2422 549 42103	BLM21B222SB-0805 SMD
5941	2422 549 43907	BEAD HF70ACC321611
5942	2422 535 94971	DRUM CHOKE COIL 100UH T
6921	3198 010 22481	DIODE BZX79-C2V4 (UAW)
6922	9332 153 70215	SMD DIODE BAV99
6923	9332 153 70215	SMD DIODE BAV99
6941	9322 041 98685	DIODE MBRS130LT3
7922	9351 861 60112	IC TDA7053A/N2 16P
7923	3198 010 42081	TRANS BC848C (UAW)
7941	9322 142 63667	IC PQ1CF2 5P
7942	3198 010 42081	TRANS BC848C (UAW)
1061	8238 277 05611	LCD PANEL POGO II 18"-LG
1062	3138 188 04600	POGO II 18"-ALL CHAS. KIT-LG
1063	8238 277 06631	INVERTER
⚠6101	9322 131 76671	BRIDGE GBU8J
7102	9322 092 42687	FET POW 2SK 1940-01
1151	3138 158 51680	POGO II 18"-MAIN PCB ASSY-5328
1152	3138 158 51690	CONTROL PCB ASSY-5360
1153	3138 158 51700	AC ADAPTOR PCB ASSY-5390
1154	3138 158 51710	AUDIO PCB ASSY-5370
1050	3138 158 51720	POGO II 18"-SEMIFINISHED-SET
1051	2438 070 98032	MAINS CORD (220V)
1052	3138 168 75960	I/F CABLE(POTOMAC-BRD)
1053	3138 168 76400	DVI-d cable
1091	8238 277 05990	SPEAKER W/BOX + WIRE ASSY
1093	3138 178 79900	MICPHONE W/ WIRE ASSY
602	3138 117 01950	E-D.F.U.
615	3138 117 02730	HEX CODE F/W(NO MATL REQ)
601	3138 117 02470	E-D.F.U. ASSY-180P

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Spare Parts List

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Model: 180P1L/00

Item	Code number	Description
8952	3138 168 75830	5P WIRE HARNESS TO AUDIO BD
8157	8238 277 06000	WIRE HARNESS 14CM
8158	3138 178 79880	AC DC LINE WITH COIL
8159	8238 277 06230	LG CABLE
8160	8238 277 03640	8P+8P CONNECTOR
8161	8238 277 06250	CONTROL BOARD CABLE

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POGO2 18”

GENERAL PRODUCT

SPECIFICATION

. ANALOG AND DIGITAL DUAL INPUT

. AUTO PICTURE ADJUSTMENT

. 16 FACTORY PRESET MODES AND 32 PRESET MODES WHICH CAN BE RECOVERED TO PRESET MODES

. USER FRIENDLY OSD DISPLAY FOR MODE IDENTIFICATION /ADJUSTMENT

. DDC1/ 2B COMMUNICATION CAPABILITY

. MAX. RESOLUTION 1280*1024 NON-INTERLACED AT 75 HZ

. 18” COLOR TFT LCD FLAT PANEL

. EASY TILT & SWIVEL BASE

. FULL RANGE POWER SUPPLY 90- 264 VAC

. CE ENVIRONMENTAL POLICY

. ANTI-GLARE TO REDUCE LIGHT REFLECTION

. POWER MANAGEMENT CAPABILITY

. SOG SUPPORT

. TCO 99

. AUDIO SUPPORT

. PROVIDE USB HUB (OPTION)

. WALL MOUNT KIT (OPTION)

. PROTECTIVE COVER (OPTION)

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CLASS NO.

00-05-31

18.1" TFT SXGA LCD CMTR-180P1L

TYPE : 180P1L/00C
BRAND : PHILIPS

8639 000 10531

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General Product Specifications

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1.0 FOREWORD

This specification describes a 18" SXGA multi-scan color TFT LCD monitor with max. resolution up to 1280*1024 /75 Hz non-interlaced.

2.0 PRODUCT PROFILE

This display monitor unit is a color display monitor enclosed in PHILIPS global styling cabinet which has an integrated tilt and swivel base.

2.1 LCD

Type NR. : LM181E1-H2MN (LG)
Outside dimensions : 412.5(w)333.0(h)22.5(t) (Typ) mm
Pitch (mm) : 0.2805 x 0.2805mm
Color pixel arrangement : RGB stripes arrangement
Display surface : Antiglare with hard coating (3H)
Number of color : 8-bit, 16,777,216 colors
Backlight : CCFL edge light system
Active area (WxH) : 359x287mm (18.1" diagonal)
View angle : Vertical 160 degree, Horizontal 160 degree (Typ)
Contrast ratio : 250:1
White luminance : 200 nits (Typ)

2.2 Scanning frequencies
Hor. : 30 82 K Hz
Ver. : 56 - 76 Hz
2.3 Video dot rate : < 140 MHz
2.4 Power input : 90-264 V AC, 50/60 2 Hz
2.5 Power consumption : < 55 W typical (exclude USB option)
2.6 Dimensions :
2.7 Weight : 8.5 KGS
2.8 Functions :
(1) D-shell analog R/G/B separate inputs, H/V sync separated, Composite (H+V) TTL level, SOG sync
(2) DVI digital Panel Link TMDS input
(3) AUDIO
(4) USB HUB (option)
(5) Microphone
2.9 Ambient temperature : +5°C to +35°C
2.10 Regulatory compliance :
(1) Safety : UL,CSA, B-mark, SISIR, SEMKO, EN60950/IEC950, CB, RFS(NZ)
(2) EMI : FCC, VCCI, CE, C-Tick, MPRIII, BCIQ
(3) Environmental Issue: TCO99
(4) Ergonomic Requirements
: TUV/GS, TUV/ISO9241-3/-8

3.0 Electrical characteristics

3.1 Interface signals

The input signals can be applied in three different modes :

1). D-shell Analog

Input signal : Video, Hsync., Vsync

Video : 0.7 Vp-p, input impedance, 75 ohm @DC

Sync. : Separate sync TTL level , input impedance 2k2 ohm terminate

Hor. sync Positive/Negative

Ver. sync Positive/Negative

Composite sync TTL level, input impedance 2k2 ohm terminate

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(Positive/Negative)

Sync on green video 0.3 Vp-p Negative (Video 0.7 Vp-p Positive)

2). Intel DVI Digital

Input signal : Single channel TMDS signal

3.1.2 Audio

Input Signal levels : 1.4 Vpp

Headphone output signal level : 32ohm 50+50mV

Input signal connector : 3.5mm mini jack

Loudspeakers : 1+1 W stereo firing

3.1.3 Microphone

Sensitivity : -51dB to 41dB

Output impedance : 1K2 Ohm typical

Directivity : -51dB at 180+20

3.2 Interface

3.2.1 DVI Cable

The input signals are applied to the display through DVI-D cable.

Length	: 1.8 M +/- 50 mm (fixed)
Connector type	: DVI-D male With DDC1/2B pin assignments. Blue connector thumb-operated jack screws

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pin assignment :

Pin No.	Description
1	TMDS data2-
2	TMDS data2+
3	TMDS data2 shield
4	NC
5	NC
6	DDC clock
7	DDC data
8	Not Connected
9	TMDS data1-
10	TMDS data1+
11	TMDS data1 shield
12	NC
13	NC
14	+5V
15	Ground(return for +5V and H/Vsync)
16	Hot plug detect
17	TMDS data0-
18	TMDS data0+
19	TMDS data0 shield
20	NC
21	NC
22	TMDS clock shield
23	TMDS clock+
24	TMDS clock-

3.2.2 D-Sub Cable

pin assignment :

PIN No.	SIGNAL
1	Red
2	Green/SOG
3	Blue
4	Sense (GND)
5	Not connected
6	Red GND
7	Green GND
8	Blue GND
9	+5V
10	Sync GND
11	Sense (GND)
12	Bi-directional data
13	H/H+V sync
14	V-sync
15	Data clock

3.2.3 Software control functions via OSD/control

OSD (On Screen Display) function

(1) Analog interface OSD :

Adjustable functions:

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MAIN CONTROLS
VOLUME
LANGUAGE
ADJUST POSITION
ADJUST SIZE
BRIGHTNESS & CONTRAST
IMAGE OPTIMIZATION
ADJUST COLOR
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
CLOSE MAIN CONTROLS
MOVE SELECTION THEN ok

VOLUME : ADJUST VOLUME

LANGUAGE : ENGLISH , ESPANOL , FRANCAIS , DEUTSCH , ITALIANO JAPANESE

ADJUST POSITION : HORIZONTAL
VERTICAL

ADJUST SIZE : full screen, native mode, user settings.

BRIGHTNESS & CONTRAST : brightness and contrast adjustment.

IMAGE OPTIMIZATION : Phase adjustment, Clock adjustment, Text/Graphics.

ADJUST COLOR : original panel color , 9300K for general use , 6500K for image management, user red green blue adjust.

PRODUCT INFORMATION : show product information

RESET TO FACTORY SETTING: recall to Factory preset settings.

INPUT SELECTION : select digital or analog input

(2) Digital interface OSD :

Adjustable functions:

MAIN CONTROLS
VOLUME
LANGUAGE
ADJUST POSITION
ADJUST SIZE
BRIGHTNESS & CONTRAST
IMAGE OPTIMIZATION
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
CLOSE MAIN CONTROLS
MOVE SELECTION THEN ok

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General Product Specifications

VOLUME : ADJUST VOLUME

LANGUAGE : ENGLISH , ESPANOL , FRANCAIS ,
DEUTSCH , ITALIANO, JAPANESE

ADJUST POSITION : HORIZONTAL
VERTICAL

ADJUST SIZE : full screen, native mode, user settings.

BRIGHTNESS & CONTRAST : brightness and contrast adjustment.

IMAGE OPTIMIZATION : Text/Graphics.

PRODUCT INFORMATION : show product information

RESET TO FACTORY SETTING : return to Factory preset timings and settings.

INPUT SELECTION : select digital or analog input

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CLASS NO.
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18.1" TFT SXGA LCD CMTR-180P1L
TYPE : 180P1L/00C
BRAND : PHILIPS

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3.3 Timing requirement

3.3.1 Mode storing capacity

(1) Factory preset modes : 16

(2) Preset modes : 32

3.3.2 Factory preset timings

The factory settings of size and centering are according to the reference timing charts (see fig-4, fig-5)

MODE NO.	1	2	3	4
RESOLUTION	640 x 350	720 x 400	640 x 480	640x480
Dot clock(MHz)	25.175	28.321	31.501	36
f h	31.469kHz	31.468kHz	37.5kHz	36kHz
A (us)	31.778(800 dots)	31.78(900dots)	26.667 (840 dots)	23.111 (832 dots)
B (us)	3.813(96 dots)	3.813(108dots)	2.032 (54 dots)	1.556 (56 dots)
C (us)	1.907(48 dots)	1.907(54dots)	3.81 (120 dots)	2.222 (80 dots)
D (us)	25.422(640 dots)	25.42(720dots)	20.317 (640 dots)	17.778 (640 dots)
E (us)	0.636(16 dots)	0.636(18dots)	0.508 (26 dots)	1.555 (56 dots)
f v	70Hz(70.09)	70Hz(70.085)	75Hz	85Hz
O (ms)	14.27(449 lines)	14.27(449 lines)	13.333 (500 lines)	11.763 (509 lines)
P (ms)	0.064(2 lines)	0.064(2 lines)	0.08 (3 lines)	0.069 (3 lines)
Q (ms)	1.907(60 lines)	1.112(34 lines)	0.427 (16 lines)	0.578 (25 lines)
R (ms)	11.12(350 lines)	12.71(400 lines)	12.8 (480 lines)	11.093 (480 lines)
S (ms)	1.175(37 lines)	0.381(13 lines)	0.026 (1 lines)	0.023 (1 lines)
SYNC. H/V POLARITY	+/-	-/+	- / -	-/-
SEP . SYNC	Y	Y	Y	Y

MODE NO.	5	6	7	8
RESOLUTION	640 x 480	640 x 480	640 x 480	800 x 600
Dot clock(MHz)	31.500	30.24	25.175	36
f h	37.861kHz	35 kHz	31.5kHz	35.2kHz
A (us)	26.413(832 dots)	28.571 (864 dots)	31.778(800 dots)	28.444(1024 dots)
B (us)	1.270(40 dots)	2.116 (64 dots)	3.813(96 dots)	2.000 (72 dots)
C (us)	3.810(120 dots)	3.175(96 dots)	1.907(48 dots)	3.556 (128 dots)
D (us)	20.317(640 dots)	21.164(640 dots)	25.422(640 dots)	22.222(800 dots)
E (us)	1.016(32 dots)	2.116(64 dots)	0.636(16 dots)	0.666 (24 dots)
f v	72.809Hz	67Hz	60Hz	56Hz
O (ms)	13.735(520 lines)	15 (525 lines)	16.683 (525 lines)	17.778 (625 lines)
P (ms)	0.079(3 lines)	0.086(3 lines)	0.064 (2 lines)	0.057 (2 lines)
Q (ms)	0.528(20 lines)	1.114(39 lines)	1.049 (33 lines)	0.626 (22 lines)
R (ms)	12.678(480 lines)	13.714(480 lines)	15.253 (480 lines)	17.066 (600 lines)
S (ms)	0.45(17 lines)	0.086(3 line)	0.317 (10 line)	0.029 (1 line)
SYNC. H/V POLARITY	-/-	- / -	- / -	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	9	10	11	12
RESOLUTION	800 x 600	800 x 600	800 x 600	832 x 624
Dot clock(MHz)	49.498	40	56.251	57.28
f h	46.9kHz	37.9kHz	53.7kHz	49.7kHz
A (us)	21.333 (1056 dots)	26.4 (1056 dots)	18.631 (1048 dots)	20.11(1152 dots)
B (us)	1.616 (80 dots)	3.2 (128 dots)	1.138 (64 dots)	1.117(64 dots)
C (us)	3.232 (160 dots)	2.2 (88 dots)	2.702 (152 dots)	3.91(224 dots)
D (us)	16.162 (800 dots)	20 (800 dots)	14.222 (800 dots)	14.52(832 dots)
E (us)	0.323 (16 dots)	1 (40 dots)	0.569 (32 dots)	0.563(32 dots)

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f v	75Hz	60Hz	85Hz	75Hz
O (ms)	13.333 (625 lines)	16.579 (628 lines)	11.756(631 lines)	13.41(667 lines)
P (ms)	0.064 (3 lines)	0.106 (4 lines)	0.056 (3 lines)	0.06(3 lines)
Q (ms)	0.448 (21 lines)	0.607 (23 lines)	0.503 (27 lines)	0.784(39 lines)
R (ms)	12.8 (600 lines)	15.84 (600lines)	11.179 (600 lines)	12.55(624 lines)
S (ms)	0.021 (1 line)	0.026 (1 line)	0.018 (1 lines)	0.016(1 lines)
SYNC. H/V POLARITY	+ / +	+ / +	+ / +	+/+
SEP . SYNC	Y	Y	Y	Y

MODE NO.	13	14	15	16
RESOLUTION	800 x 600	1024 x 768	1024 x 768	1024 x 768
Dot clock(MHz)	50	78.75	65	75
f h	48.077kHz	60kHz	48.363kHz	56.5kHz
A (us)	20.80 (1040dots)	16.66 (1312dots)	20.677(1344 dots)	17.707(1328 dots)
B (us)	2.400 (120 dots)	1.219 (96 dots)	2.092(136 dots)	1.813(136 dots)
C (us)	1.280 (64 dots)	2.235 (176 dots)	2.462(160 dots)	1.920(144 dots)
D (us)	16.00 (800 dots)	13.003 (1024 dots)	15.754(1024 dots)	13.653(1024 dots)
E (us)	1.120 (56 dots)	0.203 (16 dots)	0.369(24 dots)	0.321 (24 dots)
f v	72Hz (72.188)	75Hz (75.000)	60.004Hz	70.004Hz
O (ms)	13.85 (666 lines)	13.328 (800 lines)	16.666(806 lines)	14.272(806 lines)
P (ms)	0.125 (6 lines)	0.05(3 lines)	0.124(6 lines)	0.106(6 lines)
Q (ms)	0.478 (23 lines)	0.446 (28 lines)	0.600(29 lines)	0.514(29 lines)
R (ms)	12.48 (600 lines)	12.80 (768 lines)	15.880(768 lines)	13.599(768 lines)
S (ms)	0.770 (37 line)	0.017 (1 line)	0.062(3 lines)	0.053(3 lines)
SYNC. H/V POLARITY	+ / +	+ / +	- / -	-/-
SEP . SYNC	Y	Y	Y	Y

MODE NO.	17	18	19	20
RESOLUTION	1024 x 768	1024 x 768	1152 x 864	1152 x 864
Dot clock(MHz)	83.096	94.5	108	94.5
f h	61.1kHz	68.7kHz	67.5kHz	63.9kHz
A (us)	16.367 (1360dots)	14.561 (1376 dots)	14.815 (1600 dots)	15.661(1480 dots)
B (us)	1.348 (112 dots)	1.016 (96 dots)	1.185 (128 dots)	1.016(96 dots)
C (us)	2.022 (168 dots)	2.201 (208 dots)	2.37 (256 dots)	1.116(105 dots)
D (us)	12.323 (1024 dots)	10.836 (1024 dots)	10.667 (1152 dots)	12.19(1152 dots)
E (us)	0.674 (56 dots)	0.508 (48 dots)	0.593 (64 dots)	1.339(127 dots)
f v	76Hz	85Hz	75Hz	70Hz
O (ms)	13.142 (803 lines)	11.765 (808 lines)	13.333 (900 lines)	14.283(912lines)
P (ms)	0.049 (3 lines)	0.044 (3 lines)	0.044 (3 lines)	0.047(3lines)
Q (ms)	0.507 (31 lines)	0.524 (36 lines)	0.474 (32 lines)	0.689(44 lines)
R (ms)	12.57 (768 lines)	11.183 (768lines)	12.8 (864 lines)	13.531(864 lines)
S (ms)	0.016 (1 line)	0.014 (1 line)	0.015 (1 lines)	0.016(1 lines)
SYNC. H/V POLARITY	+ / +	+ / +	- / -	+/+
SEP . SYNC	Y	Y	Y	Y

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CLASS NO.

18.1" TFT SXGA LCD CMTR-180P1L

TYPE : 180P1L/00C
BRAND : PHILIPS

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MODE NO.	21	22	23	24
RESOLUTION	1152 x 864	1152 x 870	1152 x 900	1152 x 900
Dot clock(MHz)	79.9	100	94.5	108
f h	54.0kHz	68.7kHz	61.8kHz	71.8kHz
A (us)	18.523(1480 dots)	14.56 (1456 dots)	16.169 (1528 dots)	13.926 (1054dots)
B (us)	1.952(156 dots)	1.28 (128 dots)	1.354 (128 dots)	1.185 (128 dots)
C (us)	1.352(108 dots)	1.44(144 dots)	2.201 (208 dots)	1.778 (192 dots)
D (us)	14.418(1152 dots)	11.52 (1152 dots)	12.19 (1152 dots)	10.667 (1152 dots)
E (us)	0.801(64 dots)	0.32 (32 dots)	0.424 (40 dots)	0.296 (32 dots)
f v	60Hz	75Hz	66Hz	76Hz
O (ms)	16.671(900lines)	13.333 (916 lines)	15.151 (937lines)	13.132 (943 lines)
P (ms)	0.148(8 lines)	0.044 (3 lines)	0.065 (4 lines)	0.111 (8 lines)
Q (ms)	0.445(24 lines)	0.568(39 lines)	0.501 (31 lines)	0.46 (33 lines)
R (ms)	16.004(864 lines)	12.678 (870 lines)	14.552 (900lines)	12.533 (900 lines)
S (ms)	0.074(4 lines)	0.043 (4 line)	0.033 (2 line)	0.028 (2 lines)
SYNC. H/V POLARITY	+/+	- / -	Serr-	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	25	26	27	28
RESOLUTION	1280 x 960	1280 x 960	1280 x 1024	1280 x 1024
Dot clock(MHz)	108	129.895	130.223	108
f h	60kHz	75kHz	76kHz	64kHz
A (us)	16.667(1800 dots)	13.307 (1728 dots)	13.158 (1713 dots)	15.63 (1688 dots)
B (us)	1.037(112 dots)	1.047 (136 dots)	1.024 (133 dots)	1.037 (112 dots)
C (us)	2.889(312 dots)	1.725 (224 dots)	1.905 (248 dots)	2.296 (248 dots)
D (us)	11.852(1280 dots)	9.857 (1280 dots)	9.83 (1280 dots)	11.852 (1280 dots)
E (us)	0.889(96 dots)	0.678 (88 dots)	0.399(52 dots)	0.445 (48 dots)
f v	60Hz	75Hz	72Hz	60Hz
O (ms)	16.667(1000 lines)	13.333 (1002 lines)	14 (1064 lines)	16.661 (1066 lines)
P (ms)	0.05(3 lines)	0.039 (3 lines)	0.02 (2 lines)	0.047 (3 lines)
Q (ms)	0.600(36 lines)	0.48 (36 lines)	0.5 (38 lines)	0.594 (38 lines)
R (ms)	16(960 lines)	12.774 (960 lines)	13.468 (1024 lines)	16.005 (1024 lines)
S (ms)	0.017(1 lines)	0.04 (3 lines)	0.012 (0 line)	0.015 (1 line)
SYNC. H/V POLARITY	+/+	+ / +	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

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MODE NO.	29	30	31	32
RESOLUTION	1280 x 1024	1280 x 1024	1280 x 1024	688 x 556
Dot clock(MHz)	135	138.008	117	27
f h	80kHz	81.1kHz	71.7kHz	31.25kHz
A (us)	12.504(1688 dots)	12.326 (1664 dots)	13.949 (1632 dots)	32 (864 dots)
B (us)	1.067(144 dots)	0.474 (64 dots)	0.957 (112 dots)	3.852 (104 dots)
C (us)	1.837(248 dots)	2.133 (288 dots)	1.915 (224 dots)	1.778 (48 dots)
D (us)	9.481(1280 dots)	9.481 (1280 dots)	10.94 (1280 dots)	25.481 (688 dots)
E (us)	0.119(16 dots)	0.238 (32 dots)	0.137 (16 dots)	0.889 (24 dots)
f v	75Hz	76Hz	67Hz	50Hz
O (ms)	13.329(1066 lines)	13.139 (1066 lines)	14.883 (1067lines)	20 (625 lines)
P (ms)	0.038(3 lines)	0.099 (8 lines)	0.112 (8 lines)	0.128 (4 lines)
Q (ms)	0.475(38 lines)	0.394 (32 lines)	0.46 (33 lines)	1.408 (44 lines)
R (ms)	12.804(1024 lines)	12.622 (1024 lines)	14.283 (1024 lines)	17.972 (556 lines)
S (ms)	0.012 (1 line)	0.024(2 lines)	0.028 (2 lines)	0.672 (21 lines)
SYNC. H/V POLARITY	+/+	- / -	+ / +	-/ +
SEP . SYNC	Y	Y	Y	Y

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18.1" TFT SXGA LCD CMTR-180P1L

TYPE : 180P1L/00C
BRAND : PHILIPS

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3.3.3 Horizontal scanning

Sync polarity : Positive or Negative
Scanning frequency : 30 - 82 K Hz

3.3.4 Vertical scanning

Sync polarity : Positive or Negative
Scanning frequency : 56 - 76 Hz

3.4 Power input connection

Power cord length : 1.8 M
Power cord type : 3 leads power cord with protective earth plug.

3.5 Power management

The power consumption and the status indication of the set with power management function are as follows,

STATUS	Horizontal	Vertical	Power Spec	LED
On	Pulse	Pulse	as normal on	Green
Stand-by	No Pulse	Pulse	< 3 W	Amber
Suspend	Pulse	No Pulse	< 3 W	Amber
off	No Pulse	No Pulse	< 3 W	Amber

According to VESA power saving signaling.
TCO92 power saving requirement
EPA energy star requirement

(Power Switch Off)
for Digital input power consumption is less 3W
(In non-DMPM recoverable off mode)

3.6 Display identification

3.6.1 In accordance with VESA Display Channel Standard V1.0 and having DDC 1 and DDC 2B capability

3.6.2 In accordance with DVI requirement (DDWG digital Visual Interface revision 1.0) use DDC 1/2B and EDID 3.0 structure 2.0

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TYPE : 180P1L/00C
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4.0 Visual characteristics

4.1 Test conditions
Unless otherwise specified, this specification is defined under the following conditions.

(1) Input signal : As defined in 3.3, 1280 x 1024 non-interlaced mode (80K/75Hz), signal sources must have 75 ohm output impedance.

(2) Luminance setting : controls to be set to 175 nit with full screen 100 % duty cycle white signal

(3) Warm up: more than 30 minutes after power on with signal supplied.

(4) Ambient light: 400 -- 600 lux.

(5) Ambient temperature: 20 ± 5 C

4.2 Resolution
Factory preset modes (16 modes)

#	Resolution	Frequency	Pixel rate	Sync	Comment
1	640X350	31.5K/70HZ	25.175	(+/-)	IBM VGA 10h
2	720X400	31.5K/70HZ	28.322	(-/+)	IBM VGA 3h
3	640X480	37.5K/75HZ	31.501	(-/-)	
4	640X480	31.5K/60HZ	25.175	(-/-)	
5	800X600	35.2K/56HZ	36	(+/+)	
6	800X600	46.9K/75HZ	49.498	(+/+)	
7	800X600	37.9K/60HZ	40	(+/+)	
8	832X624	49.7K/75HZ	57.28	(+/+)	MAC
9	1024X768	48.4K/60HZ	65	(-/-)	
10	1024X768	56.5K/70HZ	75	(-/-)	
11	1152X870	68.7K/75HZ	100	(-/-)	MAC
12	1152X900	71.8K/76HZ	108	(+/+)	SUN Mode II
13	1280X1024	64.0K/60HZ	108	(+/+)	
14	1280X1024	80.0K/75HZ	135	(+/+)	
15	1280X1024	81.1K/76HZ	135.008	(-/-)	SUN Mode I
16	688X556	31.25K/50HZ	27	(-/+)	TV-PAL

Note: 1. Screen displays perfect picture at 16 factory preset modes

2. Screen displays visible picture with OSD warning when input modes are other then 32 preset modes

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4.3 Brightness : 155 nit (at panel color temperature, 5 points averaged, Fig. 1)

4.4 Image size

4.4.1 Actual display size

359x287mm

4.5 Brightness uniformity

Set contrast at 50% and turn the brightness to get average above 155 nit at center of the screen.

Apply the Fig 1, it should comply with the following formula:

$$\frac{\text{Maximum luminance of five points (brightness)}}{\text{Minimum luminance of five points (brightness)}} < 1.25$$

4.6 Check Cross talk (S)

Apply Pattern 2. Set contrast at 50 % and brightness at 100 %.

Measure YA. Then output Pattern 3 and measure YB.

the cross talk value :

$$\frac{\text{ABS(YA - YB)}}{\text{YA}} \text{ X } 100\% < 1.2\ \%$$

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4.7 White color adjustment

There are two factory preset white color 9300K, 6500K.

Apply full white pattern, with brightness in 70 % position and the contrast control at 50 % position.
The 1931 CIE Chromaticity (color triangle) diagram (x,y) coordinate for the screen center should be:

9300K CIE coordinates	X=0.281±0.020 Y=0.311±0.020
6500K CIE coordinates	X=0.312±0.020 Y=0.338±0.020

5.0 Mechanical characteristics

5.1 Controls

Front side:
- DC power switch
- OSD function key
- Brightness key
- Mute key
- Auto key

Rear :
- Video signal cable
- DVI signal cable
- Audio and Mic cable(option)
- Power cord socket
- USB hub (option)
- DC 18 V socket

5.2 Unit dimension / Weight

Set dimension (incl. pedestal): 451 * 476 * 181 mm

Net weight : 8.5 Kg

5.3 Tilt and swivel base

tilt angle : 0 to +30
swivel rotation : 40

5.4 Transportation packages

5.4.1 Shipping dimension/Weight

Carton dimension : 560 X 575 X 240 mm
Gross weight : 10 KGS

5.4.2 Block unit / Palletization

layers/block	sets/layer	sets/block unit
6	4	24

blocks/container	
20 feet	40 feet
200	720

6.0 Environmental characteristics

The following sections define the interference and susceptibility condition limits that might occur

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between external environment and the display device.

6.1 Susceptibility of display to external environment
Operating

- Temperature : +5 to 35 degree C
- Humidity : 80% max
- Altitude : 0-3658m
- Air pressure : 600-1100 mBAR

Storage

- Temperature : -20 to 60 degree C
- Humidity : 95% max (< 40°C)
- Altitude : 0-12192m
- Air pressure : 300-1100 mBAR

Note: recommend at 5 to 35C, Humidity less than 60 %

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6.2 Transportation tests

6.3

Standard		Philips UAN-D1400	NSTA
Drop Test	Height	70 cm	61 cm
	Sequence	1 corner 3 faces	1 corner 3 edge 6 face
	Test Result	electrical function ok mechanical function ok no serious damage on set appearance (room temp./-10°c, humidity 70 %)	
Vibration Test	Sequence	5-200 Hz 0.73 G 30 min. for each axis	10-50-10 Hz 0.35 mm 30 min. for each axis
	Test Result	electrical function ok mechanical function ok no serious damage on set appearance	
Bump Test	For design evaluation only Operating 10 G, 11 msec, 1000 cycles temperature :23°C humidity : 60 % air pressure : 100 kpa (according to DSD draft standard UAN-D636)		

6.3 Display disturbances from external environment

According to IEC 801-2 for ESD disturbances

6.4 Display disturbances to external environment

6.4.1 EMI

EMI : FCC,VCCI,CE,C-Tick, MPRIII, BCIQ

7.0 Reliability

7.1 Mean Time Between Failures

System MTBF (Excluding the LCD panel and CCFL) : 50,000 hrs

CCFL MTBF : 25,000 hrs (50% of original brightness)

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8.0 Quality assurance requirements

8.1 Acceptance test

according to MIL-STD-105D Control II level

AQL : 0.65 (major)
2.50 (minor)

(please also refer to annual quality agreement)

Customer acceptance criteria : UAW0377/00

9.0 Serviceability

The serviceability of this monitor should fulfill the requirements which are prescribed in UAW-0346 and must be checked with the check list UAT-0361.

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TYPE : 180P1L/00C
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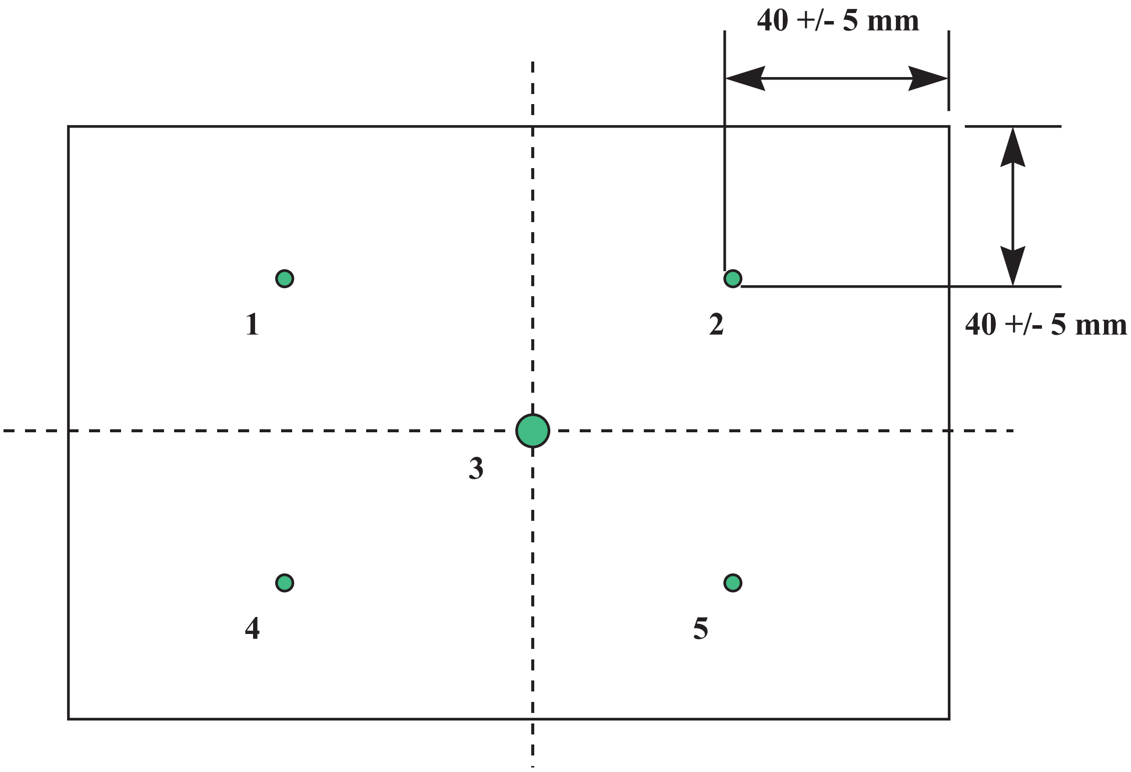
Fig 1: Brightness and Uniformity



Average = 5 points average

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Fig 2: Cross talk pattern

Gray level 46 (64 Gray level)

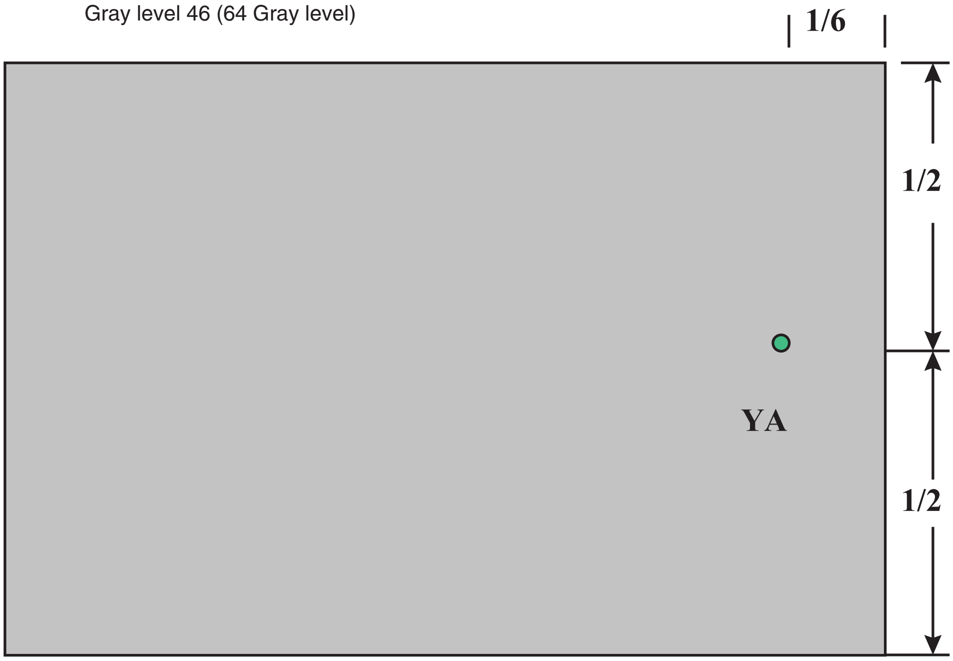
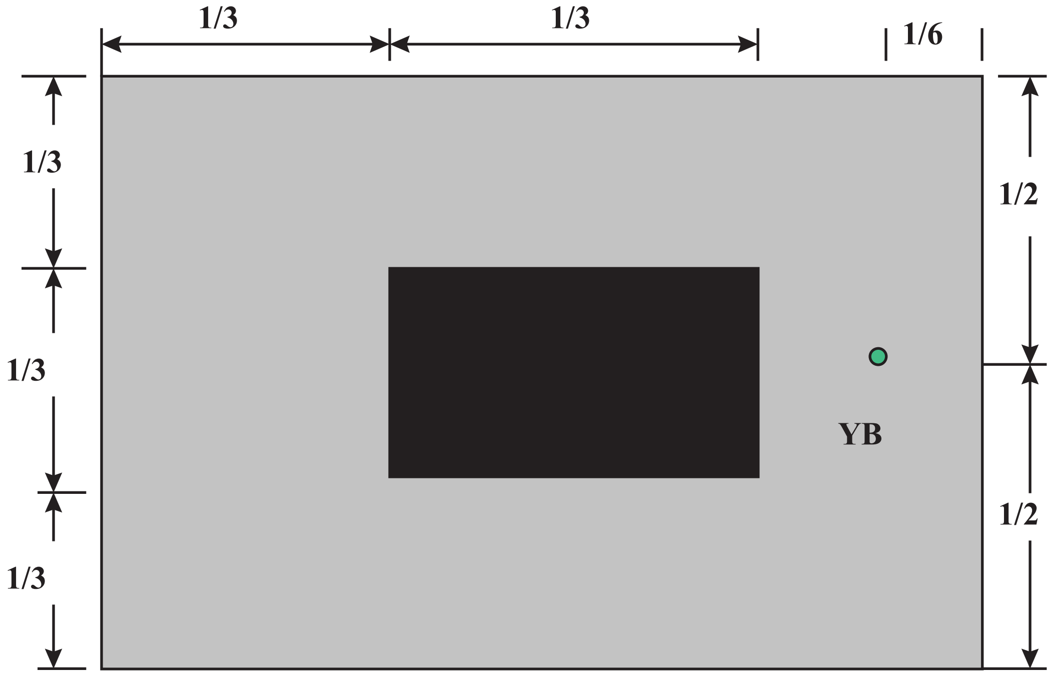


Fig 3: Cross talk Pattern

Center at Gray level 0 (Black)



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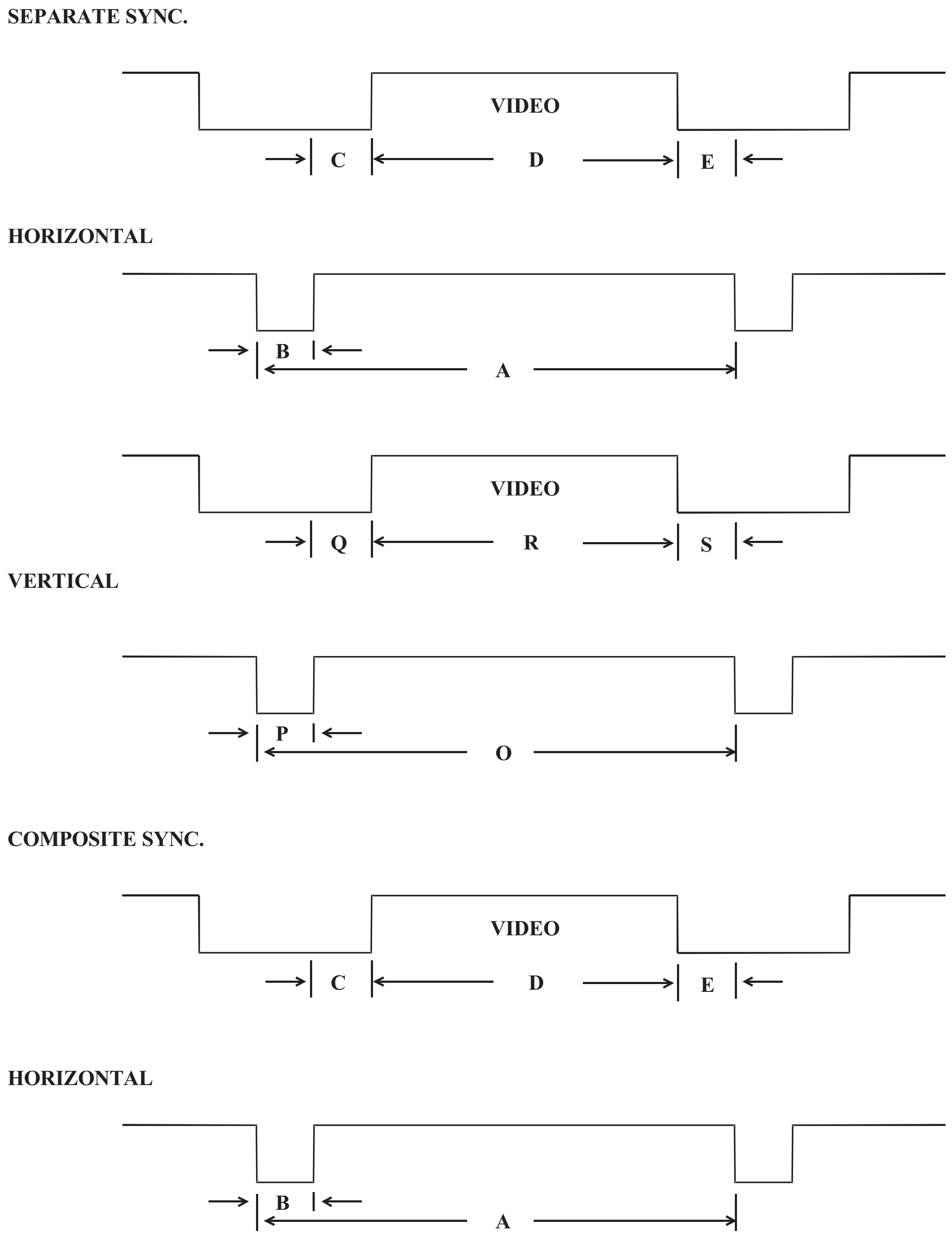
SEPARATE SYNC.
VIDEO
C
D
E
HORIZONTAL
B
A
VIDEO
Q
R
S
VERTICAL
P
O
COMPOSITE SYNC.
VIDEO
C
D
E
HORIZONTAL
B
A

FIG-4 TIMING CHART -1

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18.1" TFT SXGA LCD CMTR-180P1L
TYPE : 180P1L/00C
BRAND : PHILIPS

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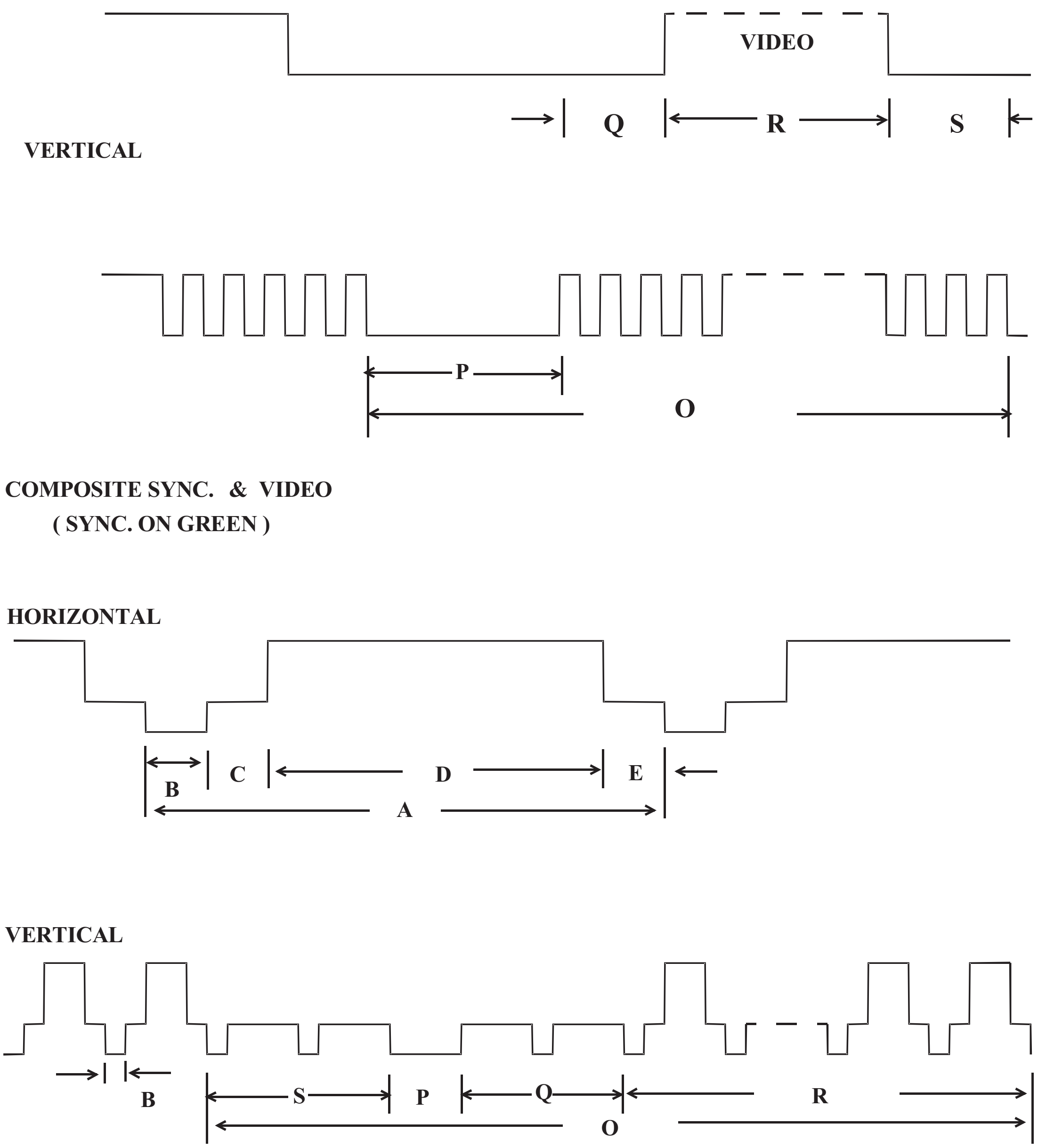
VIDEO
Q
R
S
VERTICAL
P
O
COMPOSITE SYNC. & VIDEO
(SYNC. ON GREEN)
HORIZONTAL
B
C
D
E
A
VERTICAL
B
S
P
Q
R
O

FIG-5 TIMING CHART -2

CLASS NO.
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18.1" TFT SXGA LCD CMTR-180P1L
TYPE : 180P1L/00C
BRAND : PHILIPS

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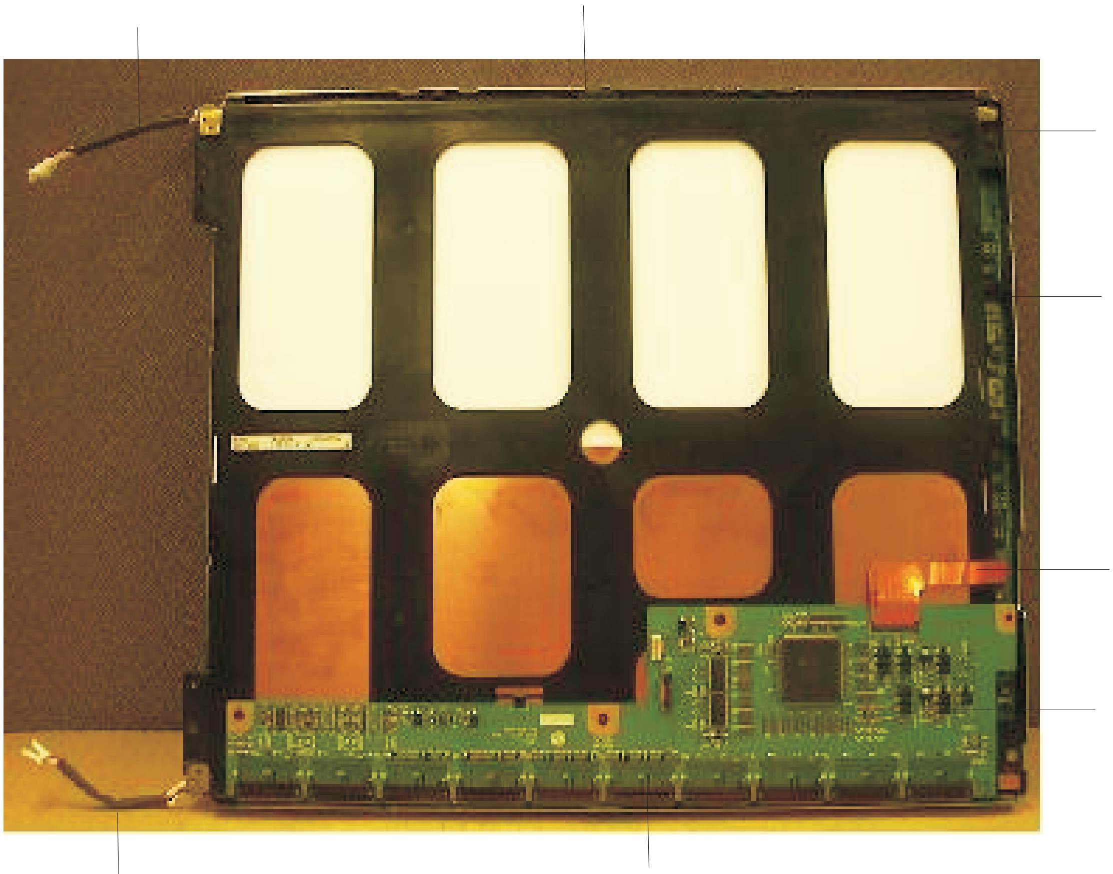
18” LG TFT LCD PANEL

LM181E1-C2MN
8238 277 02131


Polarizer
9965 000 05077 upper
9965 000 05078 lower
CCFT (upper)
9965 000 05080
PWB-A
Gate driver
9965 000 05072
Tab-IC
Gate Drive
(under PWB)
9965 000 05076
Wiring foil -B
(connector)
9965 000 05062
PWB-C
Source driver
9965 000 05061
CCFT (lower)
9965 000 05080
Tab-IC
Source driver
9965 000 05075

Inverter Schematic Diagram (I)

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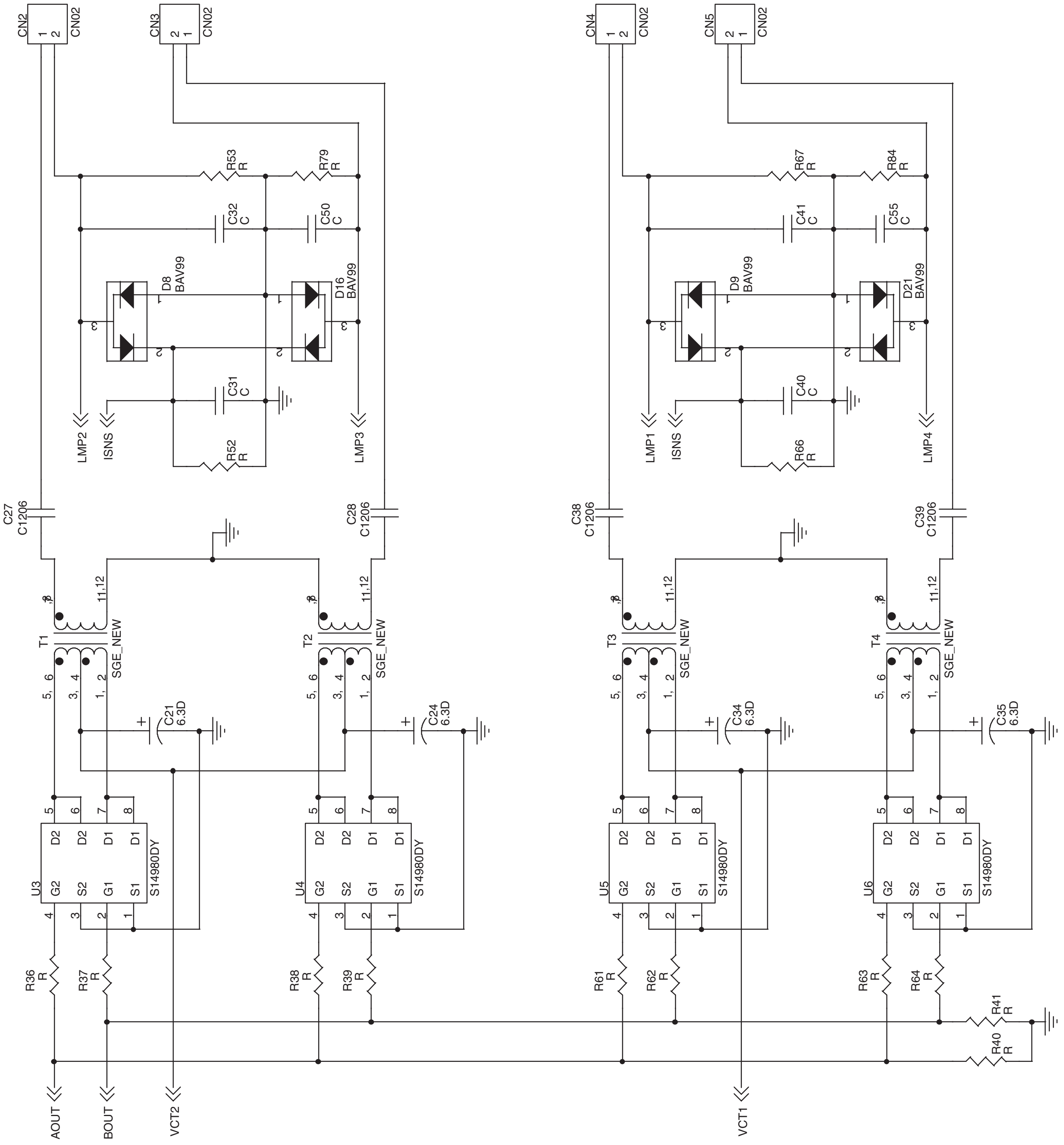
CN2
CN02
CN3
CN02
CN4
CN02
CN5
CN02
R53 R
R79 R
R67 R
R84 R
C32 C
C50 C
C41 C
C55 C
D8 BAV99
D16 BAV99
D9 BAV99
D21 BAV99
C31 C
C40 C
R52 R
R66 R
LMP2
ISNS
LMP3
LMP1
ISNS
LMP4
C27 C1206
C28 C1206
C38 C1206
C39 C1206
T1 SGE_NEW
T2 SGE_NEW
T3 SGE_NEW
T4 SGE_NEW
5, 6
3, 4
1, 2
8
11,12
C21 6.3D
C24 6.3D
C34 6.3D
C35 6.3D
U3 S14980DY
U4 S14980DY
U5 S14980DY
U6 S14980DY
G2 S2 G1 S1
D2 D2 D1 D1
R36 R
R37 R
R38 R
R39 R
R61 R
R62 R
R63 R
R64 R
R41 R
R40 R
AOUT
BOUT
VCT2
VCT1

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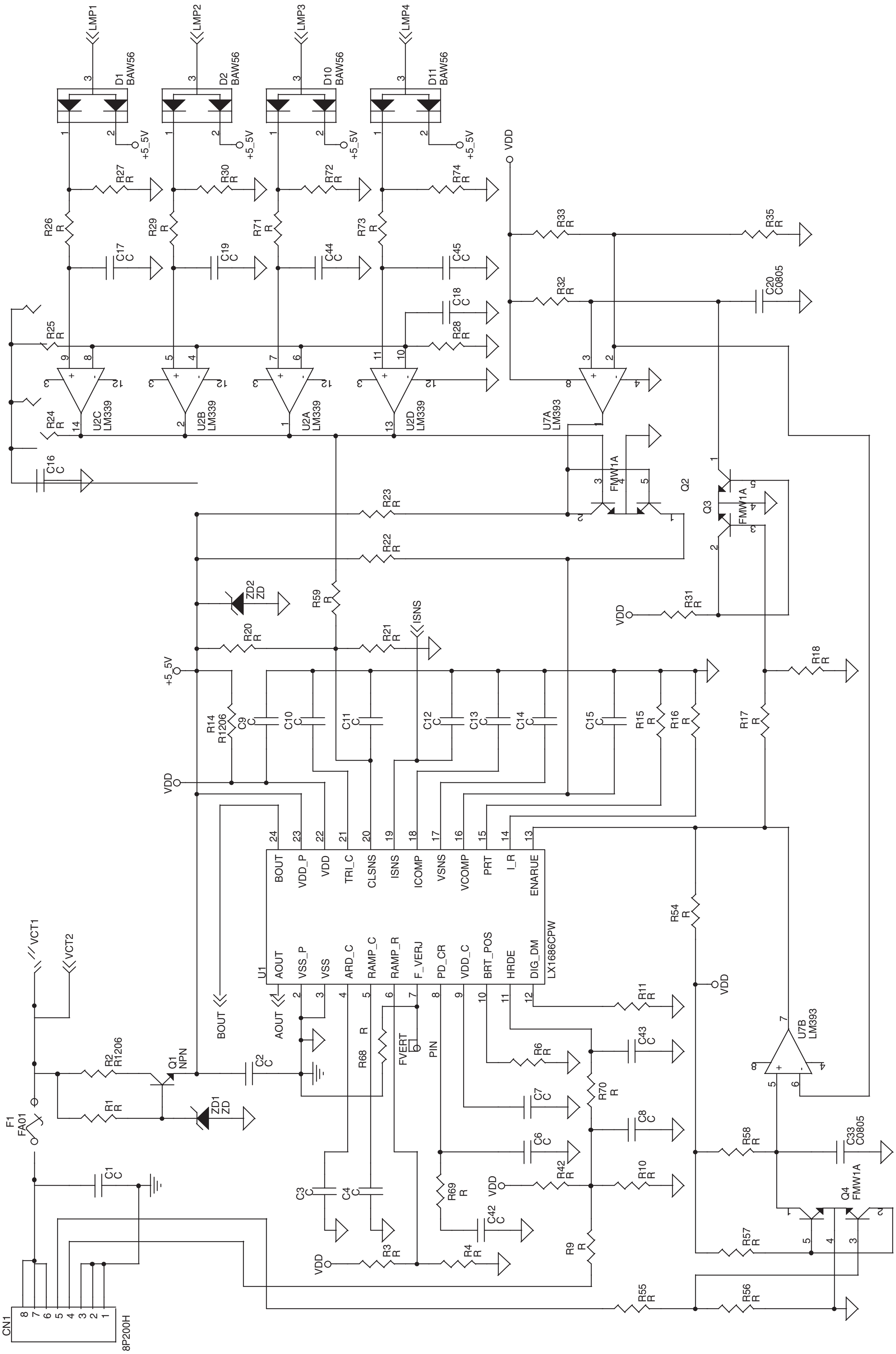
Inverter Schematic Diagram (II)


LMP1
LMP2
LMP3
LMP4
D1 BAW56
D2 BAW56
D10 BAW56
D11 BAW56
+5_5V
VDD
R27 R
R30 R
R72 R
R74 R
R26 R
R29 R
R71 R
R73 R
C17 C
C19 C
C44 C
C45 C
C18 C
R28 R
R33 R
R35 R
R32 R
C20 C0805
R25 R
R24 R
C16 C
U2C LM339
U2B LM339
U2A LM339
U2D LM339
U7A LM393
FMW1A
Q2
Q3
R23 R
R22 R
ZD2 ZD
R59 R
R20 R
R21 R
ISNS
R31 R
R18 R
R14 R1206
C9 C
C10 C
C11 C
C12 C
C13 C
C14 C
C15 C
R15 R
R16 R
R17 R
BOUT
VDD_P
TRI_C
CLSNS
ICOMP
VSNS
VCOMP
PRT
I_R
ENARUE
U1
AOUT
VSS_P
VSS
ARD_C
RAMP_C
RAMP_R
F_VERJ
PD_CR
VDD_C
BRT_POS
HRDE
DIG_DM
LX1686CPW
R54 R
VCT1
VCT2
R2 R1206
Q1 NPN
C2 C
R1 R
ZD1 ZD
F1 FA01
C1 C
R68 R
FVERT
PIN
R6 R
R11 R
C43 C
C7 C
R70 R
C8 C
C6 C
R58 R
C33 C0805
U7B LM393
R42 R
R10 R
C3 C
C4 C
R69 R
C42 C
R3 R
R4 R
R9 R
Q4 FMW1A
R57 R
R55 R
R56 R
CN1
8P200H

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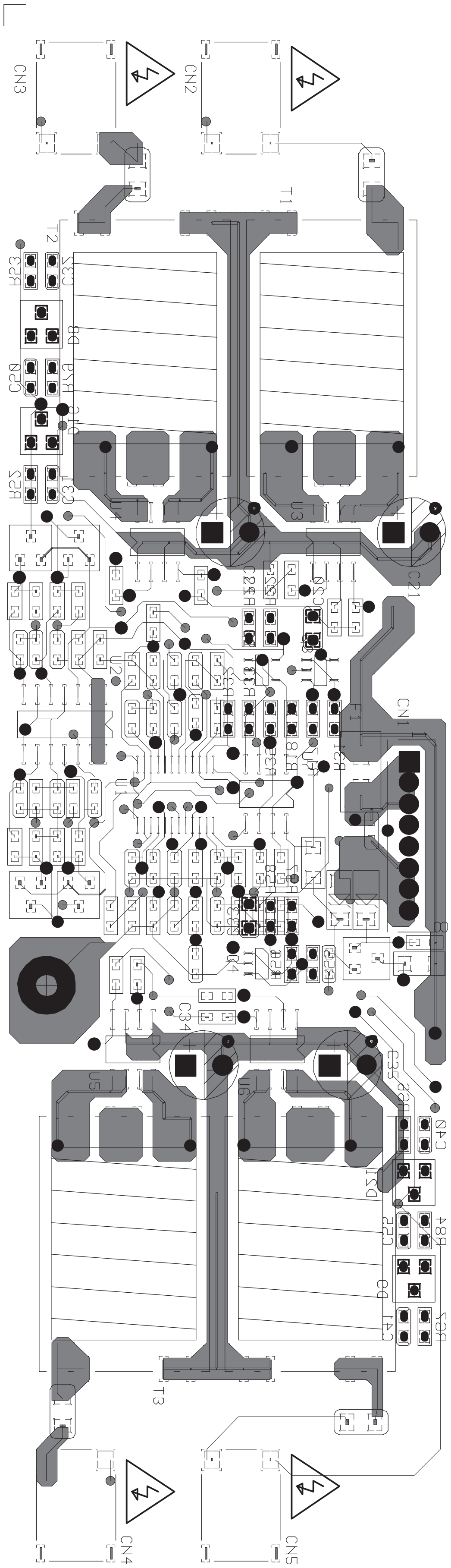
Inverter panel CBA


CN3
CN2
T1
T2
U3
C21
CN1
U1
U2
C34
U5
U6
T3
CN4
CN5

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Parts List for inverter

ITEM NUMBER	P/N	DESCRIPTION	PHILIPS service codes
R1,R4,R18,R40,R41,R54	211121002	SMD RES 0603 10K 1%	
R2	211105610	SMD RES 1206 560 1 %	
R3	211220473	SMD RES 0603 47K 5%	
R11,R68,C6,C7	211220000	SMD RES 0603 0	
R42	211125102	SMD RES 0603 51K 1%	
R9	211121001	SMD RES 0603 1K 1%	
R10	211121502	SMD RES 0603 15K 1%	
R26,R29,R53,R67,R70, R71,R73,R79,R84	211220102	SMD RES 0603 1K 5%	
R20,R25,R55,R57	211220104	SMD RES 0603 100K 5%	
R56	211220683	SMD RES 0603 68K 5%	
R58	211220244	SMD RES 0603 240K 5%	
R14	211100470	SMD RES 1206 47 1%	
R21,R23,R31	211220562	SMD RES 0603 5.6K 5%	
R16	211124422	SMD RES 0603 44.2K 1%	
R17,R24	211122002	SMD RES 0603 20K 1%	
R28	211121202	SMD RES 0603 12K 1%	
R27,R30,R32,R72,R74	211121004	SMD RES 0603 1M 1%	
R33	211126802	SMD RES 0603 68K 1%	
R35	211220333	SMD RES 0603 33K 5%	
R36,R37,R38,R39,R61, R62,R63,R64	211220390	SMD RES 0603 39 5%	
R52,R66	211121501	SMD RES 0603 1.5K 1%	
C1	226A34735 226B34735 226D34735 226E34735 226F34735	SMD C.C 0603 0.047uF 25V X7R K	
C2,C3,C9	226A22245 226B22245 226D22245 226E22245 226F22245	SMD C.C 0603 0.22uF 16V X7R K	
C10,C16,C17,C18,C19, C44,C43,C45	226A21045 226B21045 226E21045 226F21045	SMD C.C 0603 0.1uF 16V X7R K	
C20,C33	226151050	SMD C.C 0805 1uF 16V Y5V K	
C11,C32,C41,C50,C55	226A31025 226B31025 226D31025 226E31025 226F31025	SMD C.C 0603 0.001uF 25V NOP J	
C12,C14,C15	226A51035 226B51035 226D51035 226E51035 226F51035	SMD C.C 0603 0.01uF 50V X7R K	
C4	226A51815 226B51815 226D51815 226E51815 226F51815	SMD C.C 0603 180PF 50V NPO J	

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Parta List for inverter

ITEM NUMBER	P/N	DESCRIPTION	PHILIPS service codes
C13,C31,C40	226A34725	SMD C.C 0603 0.0047uF 16V X7R K	
	226B24725		
	226D24725		
	226E24725		
	226F24725		
C27,C28,C38,C39	226AB4713	SMD C.C 1206 470PF 2KV X7R K	
	226BB4713		
	226DB4713		
	226EB4713		
	226FB4713		
C21,C24,C34,C35	221244792	OS-COM 4.7UF 25V	
F1	277013090	SMD FUSE 3A 32V	
ZD1	2352306A3	RLZ6.2B	
D1,D2,D10,D11	23300BA56	SMD ZD BAW56	
D8,D6,D9,D21	23300BA99	SMD ZD BAV99	
Q1,	241002222	SMD T.R SST2222A	
Q2,Q3,Q4	2441E0007	SMD T.R FMW1A	
U3,U4,U5,U6	242009945	SMD T.R SI9945	
	2426E 0002	SMD T.R SI9945	
	2420G0002	SMD T.R SI9945	
	242130179	SMD T.R V30179	
U1	2510I0003	SMD IC LX1686	
U2	2548K0006	SMD OP BA10339	
	2548K0004	SMD OP LA6339	
U7	2545K0007	SMD OP BA10393	
	2545K0005	SMD OP LA6393	
T1,T2,T3,T4	IT0023LC1200	IT0023	
PCB		PCB LI-4005	
CN2,CN3,CN4,CN5	31502B010	SM02B-BHSS-1-TB	
CN1	31508B009	B8B-PH-K	

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TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original swevice problem has been corrected,a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition,which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and feom the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barries, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints,solder splashes,sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord).Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deteriortion and replace if necessary. Follow original layout,lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with ans bythe Ref. No. in the parts list and enclosed within a broken line * (where seceral criticalcomponents are grouped in one area) along with the safety symbols on the schematic diagrams and/or exploded views.
7. When servicing any unit, always use a seoparate isolation transformer for the chassis Failure to use a separate isolation transformer may exopose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug.) Defeating this safety feature may create a potential hazard to the service and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also check all metal control shafts(with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safety operted without danger of electrical shock.

* Broken line

Implosion

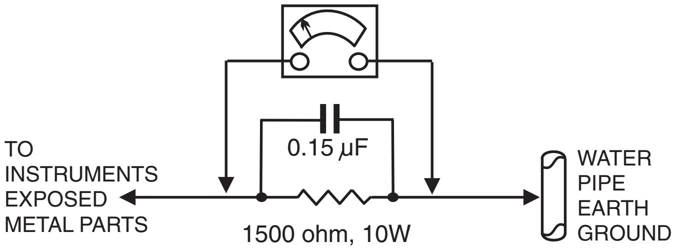
1. All picture tubes used in current model receivers are equipped with an intergral implosion system. Care should always be used, and safety glassesworn,whenever handling any picture tube. Avoid scratching or other rwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer’s specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry isoperating properly there is no possibility of an x-radiation problem. High voltage should always be kept at the anufacture,s rated value-no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is requlated correctlv and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV requation are always checked as a standard servicing procedure, and the reason for this prudent routine is cleary understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV recorded on each customer’s invoice, which will demonstrate a proper concern for the customer’s safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New picture tubes are specifically designed to withstand higher operathng voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service.Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types,as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-diation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to pervent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts.When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to thr chassis, the reading must be infinity.Remove the jumper from the ac line cord.



Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10w resistor paralleled by a 0.15uf. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohmsy volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a meausement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before retutning it to the customer.
5. Repeat the above procedure with the ac plug reversed.(Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

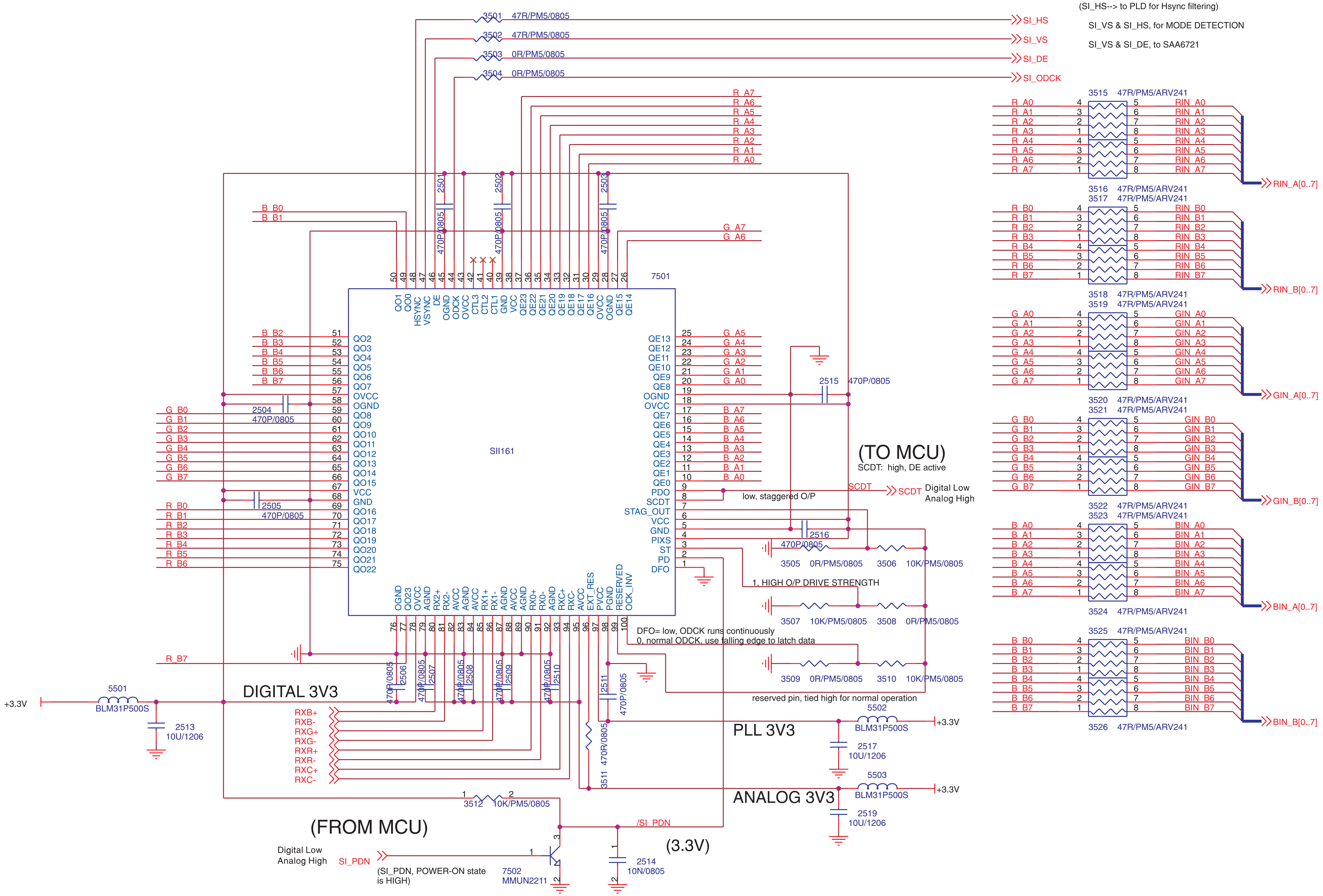
The primary source of X-radiation in this television receiver is the picture tube.The picturetube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter,or a Philips approved tupe.

Parts Replacement

Many electrical and mechanical parts in Philips television sets have special safety related charcteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards

WARNING : Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.
SERVICE NOTE : The CRT DAG is not at chassis ground.

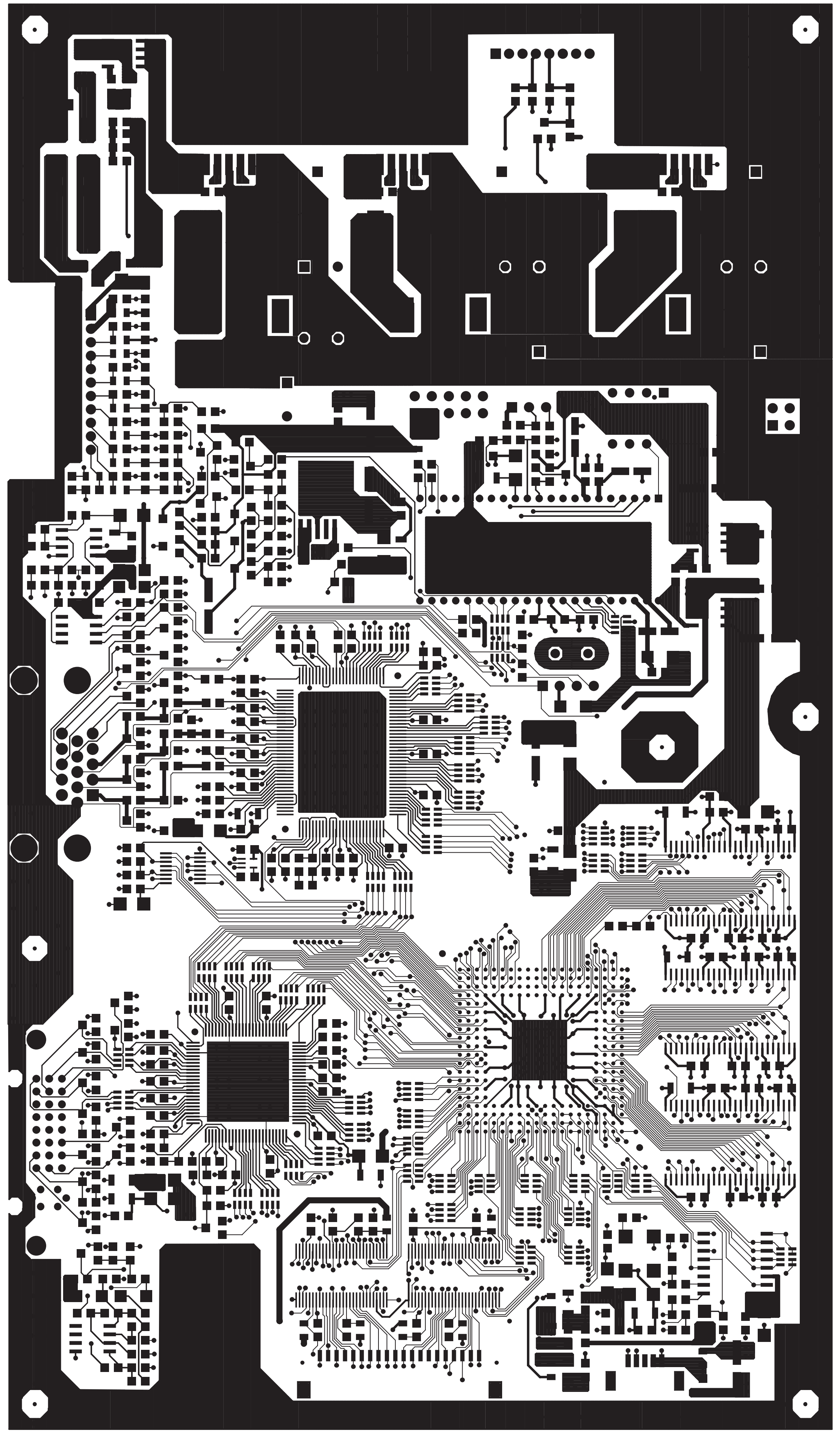
Schematic Diagram (TMDS receiver)


(SI_HS--> to PLD for Hsync filtering)
SI_VS & SI_HS, for MODE DETECTION
SI_VS & SI_DE, to SAA6721
3501 47R/PM5/0805
3502 47R/PM5/0805
3503 0R/PM5/0805
3504 0R/PM5/0805
SI_HS
SI_VS
SI_DE
SI_ODCK
7501
SII161
2501 470P/0805
2502 470P/0805
2503 470P/0805
2504 470P/0805
2505 470P/0805
2515 470P/0805
2516 470P/0805
(TO MCU)
SCDT: high, DE active
SCDT
Digital Low
Analog High
low, staggered O/P
3505 0R/PM5/0805
3506 10K/PM5/0805
1, HIGH O/P DRIVE STRENGTH
3507 10K/PM5/0805
3508 0R/PM5/0805
DFO= low, ODCK runs continuously
0, normal ODCK, use falling edge to latch data
3509 0R/PM5/0805
3510 10K/PM5/0805
reserved pin, tied high for normal operation
DIGITAL 3V3
PLL 3V3
ANALOG 3V3
5501 BLM31P500S
5502 BLM31P500S
5503 BLM31P500S
2513 10U/1206
2517 10U/1206
2519 10U/1206
+3.3V
RXB+
RXB-
RXG+
RXG-
RXR+
RXR-
RXC+
RXC-
3511 470R/0805
3512 10K/PM5/0805
(FROM MCU)
Digital Low
Analog High
SI_PDN
/SI_PDN
(SI_PDN, POWER-ON state is HIGH)
7502 MMUN2211
(3.3V)
2514 10N/0805
3515 47R/PM5/ARV241
3516 47R/PM5/ARV241
3517 47R/PM5/ARV241
3518 47R/PM5/ARV241
3519 47R/PM5/ARV241
3520 47R/PM5/ARV241
3521 47R/PM5/ARV241
3522 47R/PM5/ARV241
3523 47R/PM5/ARV241
3524 47R/PM5/ARV241
3525 47R/PM5/ARV241
3526 47R/PM5/ARV241
RIN_A[0..7]
RIN_B[0..7]
GIN_A[0..7]
GIN_B[0..7]
BIN_A[0..7]
BIN_B[0..7]

Main panel C.B.A.

Main panel C.B.A.
Component position

Main panel C.B.A.
Back side



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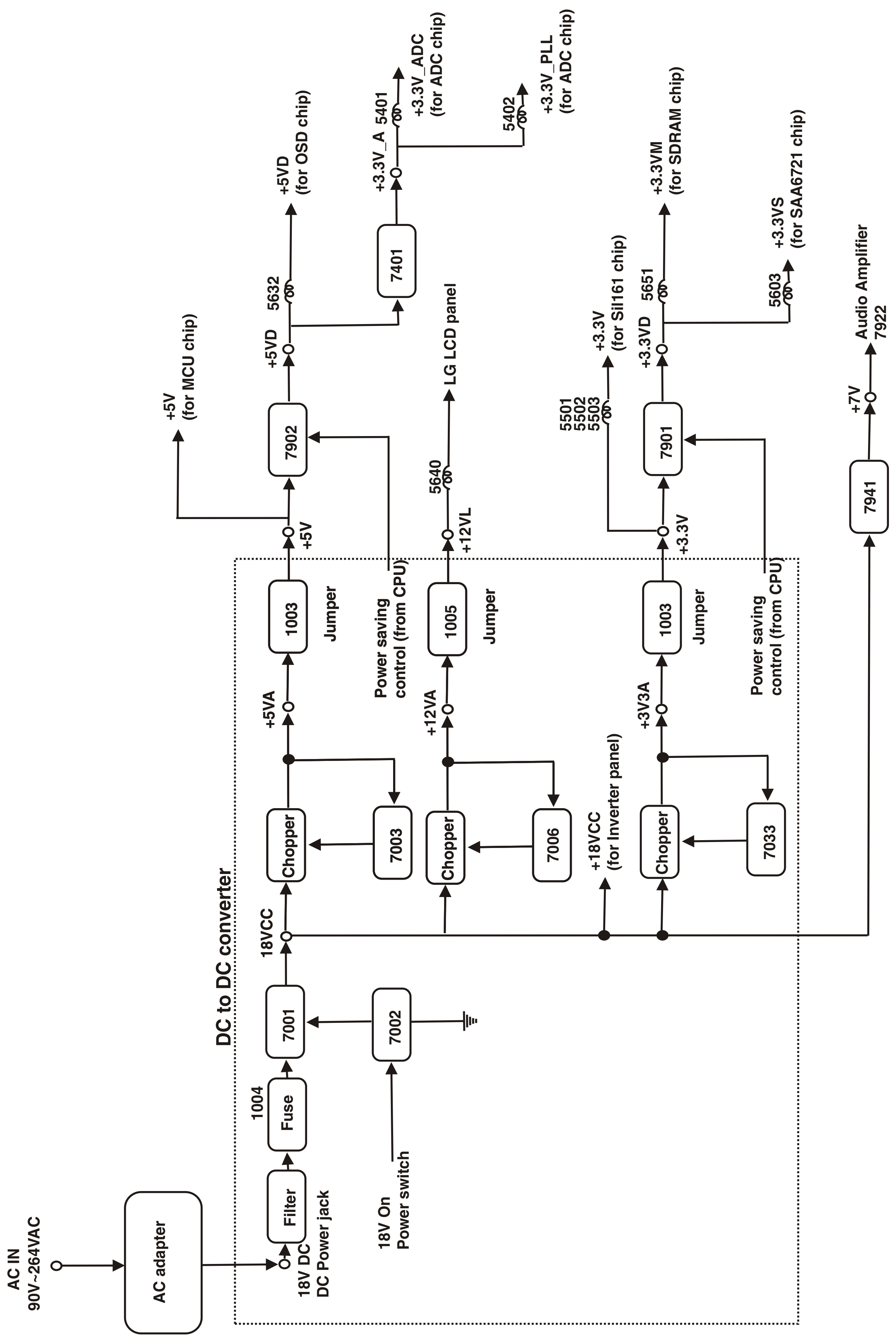
Power Distribution Flow


AC IN
90V~264VAC
AC adapter
18V DC
DC Power jack
Filter
1004
Fuse
7001
7002
18V On
Power switch
DC to DC converter
18VCC
Chopper
7003
+5VA
1003
Jumper
+5V
+5V
(for MCU chip)
7902
Power saving
control (from CPU)
+5VD
5632
+5VD
(for OSD chip)
7401
+3.3V_A
5401
+3.3V_ADC
(for ADC chip)
5402
+3.3V_PLL
(for ADC chip)
Chopper
7006
+12VA
1005
Jumper
+12VL
5640
LG LCD panel
+18VCC
(for Inverter panel)
Chopper
7033
+3V3A
1003
Jumper
+3.3V
5501
5502
5503
+3.3V
(for SiI161 chip)
7901
Power saving
control (from CPU)
+3.3VD
5651
+3.3VM
(for SDRAM chip)
5603
+3.3VS
(for SAA6721 chip)
7941
+7V
Audio Amplifier
7922

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Recommended Parts List for inverter

No.	Description	Category	Maker's P/N	Service code
F1	SMD FUSE 3A 32V	FUSE	277013090	9965 000 06229
C17	SMD C.C 0603 0.1uF 16V X7R K	CAPACITOR	226A21045	9965 000 06230
C27	SMD C.C 1206 470PF 2KV X7R K	CAPACITOR	226AB4713	9965 000 06231
D8	SMD ZD BAV99	DIODE	23300BA99	5322 130 34337
Q1	SMD T.R SST2222A	TRANSISTOR	241002222	9965 000 06232
Q2	SMD T.R FMW1A	TRANSISTOR	2441E0007	9965 000 06228
U3	SMD T.R Si9945	IC	242009945	9965 000 06222
	SMD T.R Si9945	IC	2426E0002	
	SMD T.R Si9945	IC	2420G0002	
	SMD T.R V30179	IC	242130179	9965 000 06233
U1	SMD IC LX1686	IC	2510I0003	9965 000 06234
U2	SMD OP Ba10339	IC	2548K0006	4822 209 60045
	SMD OP LA6339	IC	2548K0004	4822 209 61672
U7	SMD OP Ba10393	IC	2545K0007	9965 000 06225
	SMD OP LA6393	IC	2545K0005	9965 000 06226
T1	IT0023	TRANSFORMER	IT0023LC1200	9965 000 06227

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Important Safety Notice

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company** Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

* * Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line*
(where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design.
Servicer assumes all liability.

** Broken Line* ▬ ▪ ▬ ▪ ▬ ▪

FOR PRODUCTS CONTAINING LASER :

DANGER-	Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION-	Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
CAUTION-	The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

Take care during handling the LCD module with backlight unit

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person's body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a soft material. (Cleaning with a dirty or rough cloth may damage the panel.)

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Technical Data

Technical Specifications

LCD Panel
Screen type : LG Active matrix - TFT LCD
Screen dimensions : 18.1 inches (diagnoal)
Preset display area
  Horizontal : 359 mm
  Vertical : 287 mm
Pixel pitch : 0.28 x 0.28 mm
Viewing angle : ±160° (vertical)
: ±160° (horizontal)
Luminance output : 200 CD/m^2
Contrast ratio : 250 typical
Faceplate coating : Anti-glare with hard coating 3H
Backlight : CCFL edge light system

Resolution
Horizontal scan range : 30 kHz to 82 kHz (automatic)
Vertical scan range : 56 kHz to 76 Hz (automatic)
Optimal preset resolution : 1280 x 1024 at 60 Hz
Highest preset resolution : 1280 x 1024 at 75 Hz

Electrical
Video input signals : Analog,0.7Vpp, positive at 75 ohms
Synchronization input signals : Separate horizontal and vertical / composite ;TTL level, positive or negative, Sync On Green

AC input voltage / frequency : 90 to 264 VAC / 50 or 60 Hz ± 3 Hz

Physical Characteristics
Connector type : DVI-D, 15-pin D-subminiature

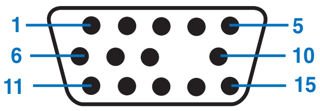
Signal cable type : Detachable

Tilt and swivel angle of pedestal
  Tilt angle of forward : 0 degree
  Tilt angle of backward : 30 degree
  Swivel angle of left : 40 degree
  Swivel angle of right : 40 degree

Dimensions
  Height : 476 mm
  Depth : 181 mm
  Width : 451 mm
Weight (monitor only) : 8.5 kg
Weight (with packaging) : 10 kg
Temperature
  Operating : 5°C to 35°C (41°F to 95°F)
  Non-operating : -20°C to 60°C (-43°F to 140°F)
Humidity
  Operating : 80% max. (non-condensing)
  Non-operating : 95% max. (non-dondensing)
Altitude
  Operating : 3,658 m
  Non-operating : 12,192 m

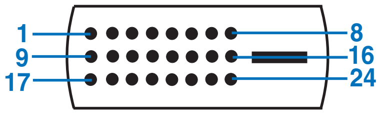
Pin Assignment

D-Sub connector



Pin No.	Assignment
1	Red video input
2	Green video input / Sync On Green
3	Blue video input
4	Sense (ground)
5	No connected
6	Red video ground
7	Green video ground
8	Blue video ground
9	Not connected
10	Logic (Sync) ground
11	Sense (ground)
12	Bi-directional data (SDA of DDC)
13	H / H+V Sync
14	V. Sync (VCLK of DDC)
15	Data clock (SCL of DDC)

DVI-D connector
(Digital Visual Interface - Digital)



Pin No.	24-Pin Side of the Signal Cable
1	TMDS Data 2-
2	TMDS Data 2+
3	TMDS Data 2/4 Shield
4	TMDS Data 4-
5	TMDS Data 4+
6	DDC Clock
7	DDC Data
8	No connection
9	TMDS Data 1-
10	TMDS Data 1+
11	TMDS Data 1/3 Shield
12	TMDS Data 3-
13	TMDS Data 3+
14	+5V Power
15	Ground (+5)
16	Hot Plug Detect
17	TMDS Data 0-
18	TMDS Data 0+
19	TMDS Data 0/5 Shield
20	TMDS Data 5-
21	TMDS Data 5+
22	TMDS Clock Shield
23	TMDS Clock+
24	TMDS Clock-

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Forward

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Data Storage

Factory preset mode:

This monitor has 16 factory-preset modes as indicated in the following table :

#	Resolution	Frequency	Pixel rate	Sync	Comment
1	640X350	31.5K/70HZ	25.175	(+/-)	IBM VGA 10h
2	720X400	31.5K/70HZ	28.322	(-/+)	IBM VGA 3h
3	640X480	37.5K/75HZ	31.501	(-/-)	
4	640X480	43.3K/85HZ	36	(-/-)	
5	640X480	37.9K/72HZ	31.5	(-/-)	
6	640X480	35.0K/67HZ	30.24	(-/-)	
7	640X480	31.5K/60HZ	25.175	(-/-)	
8	800X600	35.2K/56HZ	36	(+/+)	
9	800X600	46.9K/75HZ	49.498	(+/+)	
10	800X600	37.9K/60HZ	40	(+/+)	
11	800X600	53.7K/85HZ	56.251	(+/+)	
12	832X624	49.7K/75HZ	57.28	(+/+)	MAC
13	800X600	48.1K/72HZ	50	(+/+)	
14	1024X768	60.0K/75HZ	78.75	(+/+)	
15	1024X768	48.4K/60HZ	65	(-/-)	
16	1024X768	56.5K/70HZ	75	(-/-)	
17	1024X768	61.1K/76HZ	83.096	(+/+)	IBM XGA-2
18	1024X768	68.7K/85HZ	94.5	(+/+)	
19	1152X864	67.5K/75HZ	108	(+/+)	
20	1152X864	63.9K/70HZ	94.5	(+/+)	non-VESA
21	1152X864	54.0K/60HZ	79.9	(+/+)	non-VESA
22	1152X870	68.7K/75HZ	100	(-/-)	MAC
23	1152X900	61.8K/66HZ	92.94	serr-	SUN Mode IV
24	1152X900	71.8K/76HZ	108	(+/+)	SUN Mode II
25	1280X960	60.0K/60HZ	108	(+/+)	
26	1280X960	75.0K/75HZ	129.895	(+/+)	non-VESA
27	1280X1024	76.0K/72HZ	130.223	(+/+)	DOS/V
28	1280X1024	64.0K/60HZ	108	(+/+)	
29	1280X1024	80.0K/75HZ	135	(+/+)	
30	1280X1024	81.1K/76HZ	135.008	(-/-)	SUN Mode I
31	1280X1024	71.7K/67HZ	117	(+/+)	SUN Mode V
32	688X556	31.3K/50HZ	27	(-/+)	TV-PAL

Meanwhile, it also reverse 16 sets data space available for user storage new timings data.

Automatic Power Saving

If you have VESA's DPMS compliance display card or software installed in your PC, the monitor can automatically reduce power consumption when power saving function active. And if an input from keyboard, mouse or other input devices is detected, the monitor will automatically "wake up". The following table shows the power consumption and signaling of this automatic power saving feature :

Power Management Definition

VESA's mode	VIDEO	H-SYNC	V-SYNC	POWER USED	POWER SAVING(%)	LED COLOR
ON	Active	Yes	Yes	< 55 W	0 %	Green
Stand-by	Blanked	No	Yes	< 3 W	83.3 %	Amber
Suspend	Blanked	Yes	No	< 3 W	83.3 %	Amber
OFF	Blanked	No	No	< 3 W	90 %	Amber

This monitor is Environmental Protection Agency (EPA) Energy Star compliant and TCO'99 power management compatible.
*Zero power consumption in OFF mode can only be achieved by disconnecting the mains cable from the monitor.

ENERGY STAR® is a U.S. registered mark. AS AN ENERGY STAR PARTNER, PHILIPS HAS DETERMINED THAT THIS PRODUCT MEETS THE ENERGY STAR GUIDELINES FOR ENERGY EFFICIENCY.

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Connection to PC

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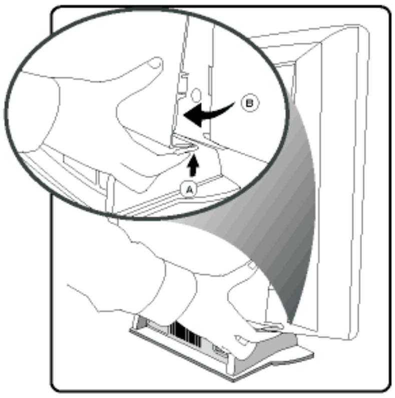
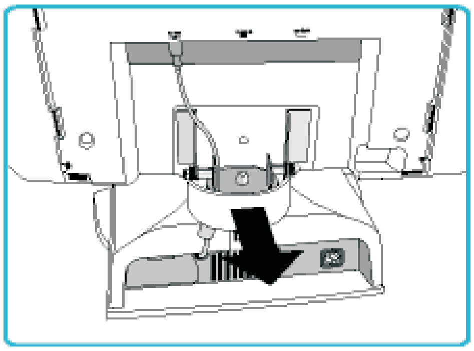
Please follow the steps to connect your LCD Monitor to PC.

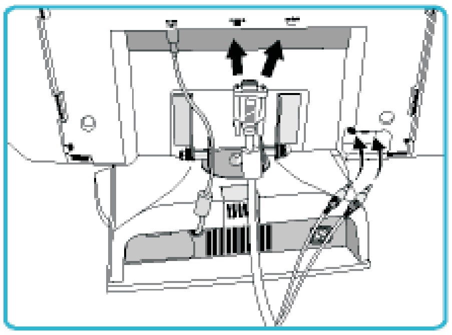
1. To remove the back cover, Press up to disengage the clips on each side, then pull and lift.



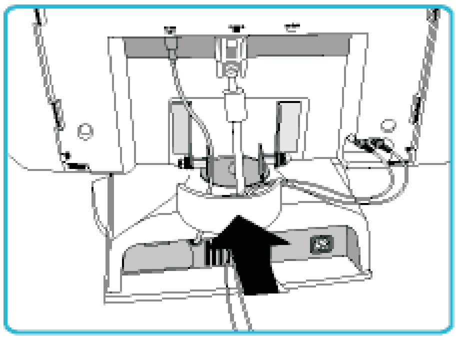
2. Remove the plastic ring from the hinge.



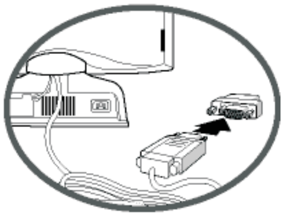
3. Plug in the video cable into VGA or DVI-D connector. Also connect USB and audio cable, if any.



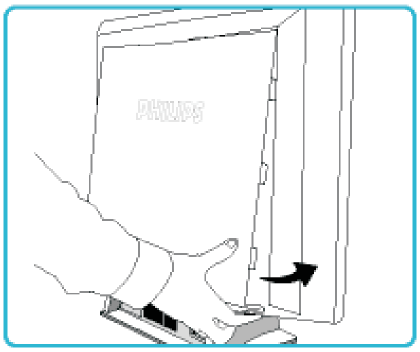
4. Cover the cables with the plastic ring and put the ring back on the hinge



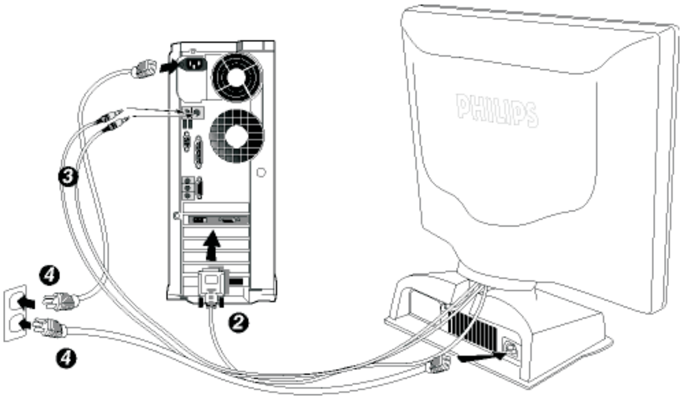
NOTE: If you use an Apple Macintosh™, you need to connect the special Mac adapter to one end of the monitor signal cable.



5. Replace the back cover on the monitor.



6. Connect to Your PC.
6.1 Turn off your computer and unplug its power cable.
6.2 Connect the monitor signal cable to the video connector on the back of your computer.
6.3 Connect the audio, microphone and USB to the ports on the back of your computer, if any.
6.4 Plug the power cord of your computer and your monitor into a nearby outlet.
6.5 Turn on your computer and monitor. If the monitor displays an image, installation is complete.



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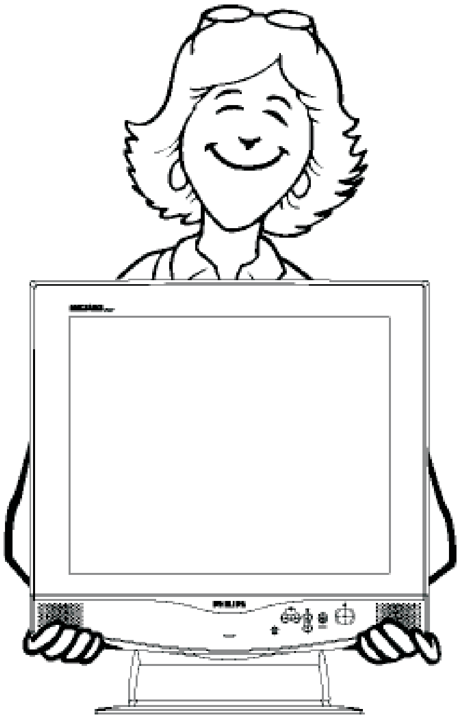
Installation & Accessories

Installation Locations

Avoid Heat and Extreme Cold

1. Do not store or use the LCD monitor in locations exposed to heat, direct sunlight, or extreme cold.
2. Avoid moving the LCD monitor between locations with large temperature differences. Choose a site falling within the following temperature and humidity ranges.
   Temperature: 5-35°C 41-95°F
   Humidity: 20-80% RH
3. Do not subject the LCD monitor to severe vibration or high impact conditions. Do not place the LCD monitor inside a car trunk.
4. Take care not to mishandle this product by either knocking or dropping during operation or transportation.
5. Do not store or use the LCD monitor in locations exposed to high humidity or a dusty environment. Also do not allow water or other liquids to spill on or into the LCD monitor

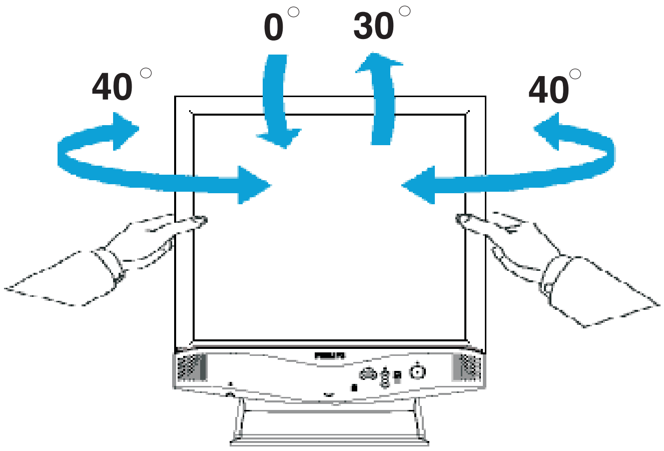
Correct handling of the monitor



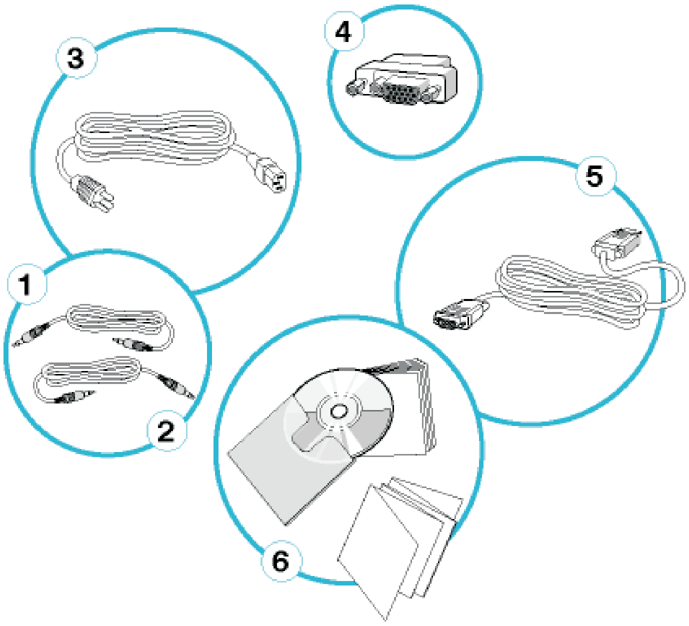
1. When handling the monitor, grip the bottom firmly with both hands and ensure that the front panel faces outward before lifting. Please refer to the diagram on the right.
2. Handling the monitor with care prevents scratching and damage. If the monitor becomes damaged, immediately disconnect the power from the unit and have it checked by a qualified service person before using it again.
3. To prevent fire or electrical shock, do not drop the monitor.
4. When moving the monitor, be sure to unplug all power cords in order to avoid injury or damage to the equipment.

Pedestal

With the built-in pedestal, you can tilt or swivel the monitor for the most comfortable viewing angle.



Accessory Pack



1. Audio in Cable (Option only available for Audio version)
2. Microphone out Cable (Option only available for Audio version)
3. Power Cable (socket may differ for different countries)
4. Macintosh Adapter (optional)
5. VGA Signal Cable (Analog D-Sub type)
6. E-DFU package with Quick Setup Guide, Using Your Monitor Manual, and CD-ROM.

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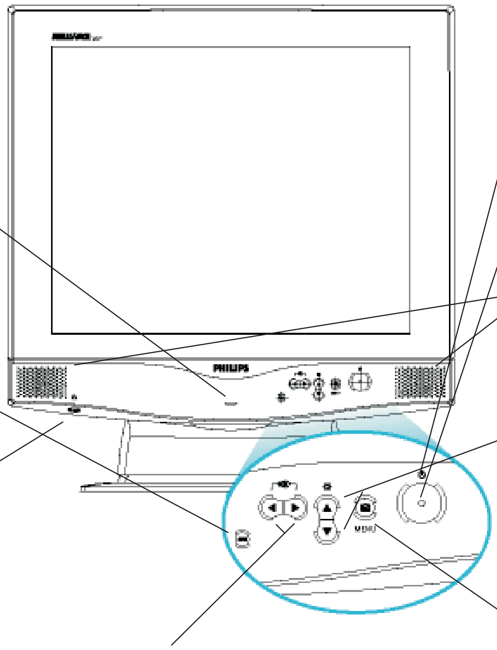
Description of Controls

FRONT VIEW



Built-in Microphone
-Allows you to speaker into your computer.

AUTO

AUTO Adjust Button-
Press this button for optimal picture display. Clock,Phase.Vertical position and Horizontal position are adjusted automatically.

Earphone Jack

◀ ▶

Mute/OSD Control Button - Muting function and OSD controls when adjustment .

Power Button - Turns the monitor On or Off.

LED - Light Emitting Diode turns green when the monitor is on.

Speakers - Transmit sounds from your computer or amplifier.

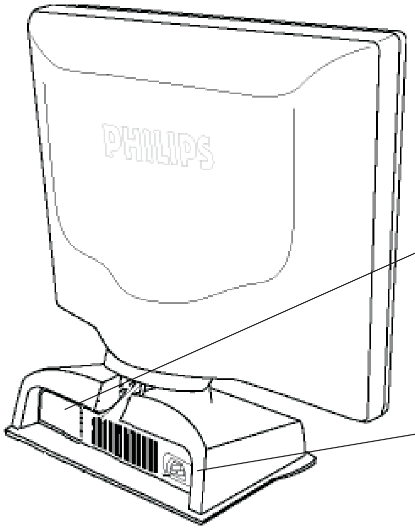
☼ ▲ ▼

Brightness/Function Selection Button -
Direct adjust brightness or select functions when adjustment.

OK

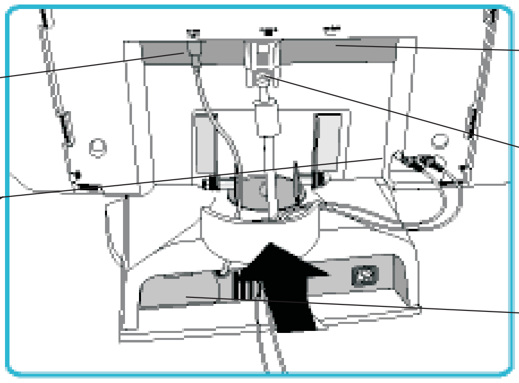
On Screen Display (OSD) button -
Brings up the On Screen Display and helps you navigate through it.

REAR VIEW



USB Bay - Slot for plugging in USB Hub. Optional hardware that allows true Plug- and-Play.

Power Plug - Plug the AC power cord in here.



DC power cord

Audio in connector
(🔈 Speaker)

Microphone out connector 🎙

Digital DVI - D

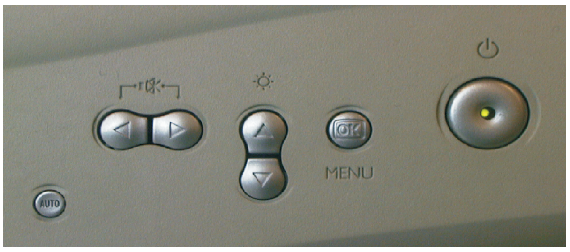
Analog D-SUB cable

USB Bay

Go to cover page

Advanced control of OSD

Front control panel


AUTO
MENU
OK

To Lock/Unlock OSD function

The OSD function can be locked by pressing OK button for more than 10 seconds, the screen shows following windows for 3 seconds. Everytime when you press OK or AUTO button, this message appears on the screen automatically. The ▲ & ▼ (brightness) , ◀ & ▶ (mute) hotkey are still functional for brightness and mute expectively while OSD locked

ATTENTION

OSD MAIN MENU LOCKED

Locked OSD function can be released by pressing OK button for more than 10 seconds. While press OK button for OSD unlocked purpose, the screen will keep showing “OSD MAIN MENU LOCKED” until OSD function unlocked and screen automatically shows following window for 3 seconds.

ATTENTION

OSD MAIN MENU UNLOCK

Switch ON/OFF attention signals

All attention signals can be switched off by keep pressing AUTO button for more than 10 seconds if there is no video signal supplied.

ATTENTION

ATTENTION SIGNAL OFF

Recover attention signals by pressing AUTO button for more than 10 seconds without video signal input.

ATTENTION

ATTENTION SIGNAL ON

Access Service Mode

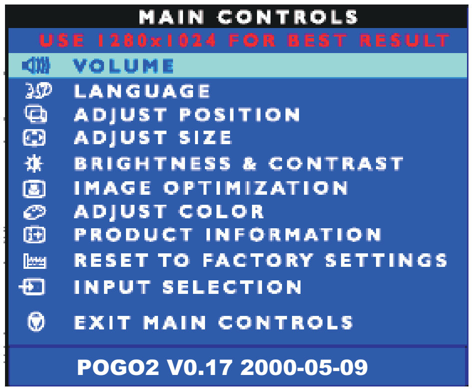
Operating monitor with no signals (power saving mode), keep pressing OK button for more than 10 seconds. Following information will appear on the screen. Leave service mode by either re-feed video signal or simply turn off and on the power of monitor.

SERVICE MODE

SERIAL NO.: TY 123456
HOURS OF OPERATION: 000103

Access Factory Mode

To hold OK and AUTO buttons then power on the monitor. Press OK to bring up OSD menu for confirmation as below:


MAIN CONTROLS
USE 1280x1024 FOR BEST RESULT
VOLUME
LANGUAGE
ADJUST POSITION
ADJUST SIZE
BRIGHTNESS & CONTRAST
IMAGE OPTIMIZATION
ADJUST COLOR
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
POGO2 V0.17 2000-05-09

In the factory mode, once video signal removed, a full white pattern will be display on the screen as Fig.1 in stead of power saving mode. In other words, the power saving function will be disable in the factory mode.

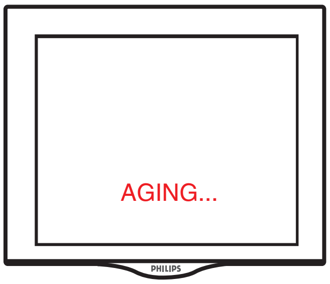

AGING...
PHILIPS

Fig.1

Leave factory mode by simply power off the monitor.

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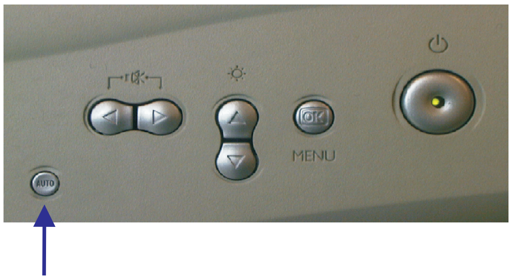
CLOCK & PHASE Adjustments

Due to the different quality of video signal generated from graphics cards. It is necessary to adjust CLOCK and PHASE functions for the optimal video display of LCD monitor. Following steps will guide you to make correct adjustment of CLOCK and PHASE.

However, CLOCK and PHASE functions are only available while analog video signal is supplied. Operating unit under digital signal state, the video clock information can be obtained from graphics cards directly. Therefor, it is unnecessary to adjust these functions

Auto adjustment hotkey


MENU
OK
AUTO

The 180P has build-in a auto adjustment hotkey on the front panel, you may obtained a optimal video display by simply press the AUTO button and save the settings. CLOCK, PHASE, Vertical position, and Horizontal position are adjusted automatically.

Manual adjustment

If the quility of display still poor or flicker, you may also improve it by manual adjust CLOCK and PHASE functions to eliminate the flicker.

Step 1 : Click on the Start button (Win95, Win98 or Win NT) and choose " Shut Down...". as shown in Fig.1

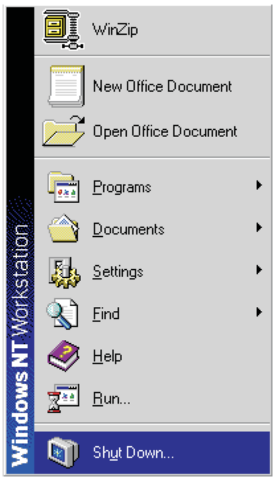
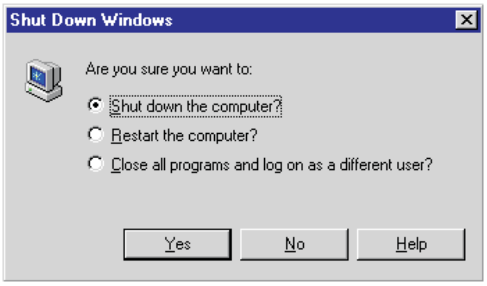

WinZip
New Office Document
Open Office Document
Programs
Documents
Settings
Find
Help
Run...
Shut Down...
Windows NT Workstation

Fig.1

Step 2 : The menu of " Shut Down Windows " is as shown in Fig. 2



Shut Down Windows

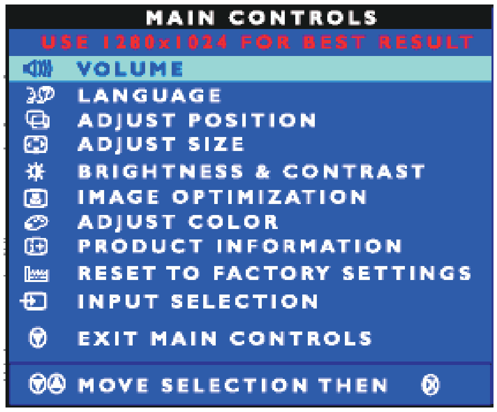
Are you sure you want to:

● Shut down the computer?
○ Restart the computer?
○ Close all programs and log on as a different user?

Fig. 2

Step 3 : Remaining Shut Down Window on the screen , follow The CLOCK and PHASE adjustment instructions for the optimal video display.

Step 4 : Press the OK button to bring up OSD menu.


MAIN CONTROLS
USE 1280x1024 FOR BEST RESULT
VOLUME
LANGUAGE
ADJUST POSITION
ADJUST SIZE
BRIGHTNESS & CONTRAST
IMAGE OPTIMIZATION
ADJUST COLOR
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
MOVE SELECTION THEN

Step 5 : Select IMAGE OPTIMIZATION by press ▼ button.
Step 6 : Press OK for bring up it's submenu.

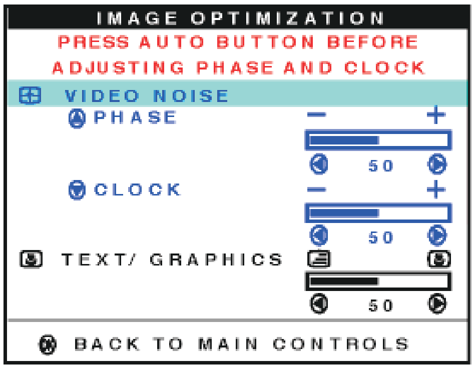
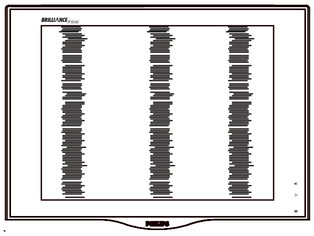


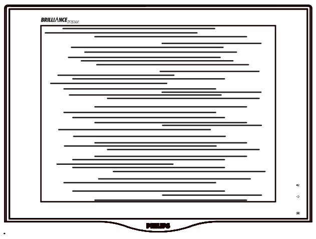
IMAGE OPTIMIZATION
PRESS AUTO BUTTON BEFORE
ADJUSTING PHASE AND CLOCK
VIDEO NOISE
PHASE
50
CLOCK
50
TEXT/ GRAPHICS
50
BACK TO MAIN CONTROLS

Step 7 : Press ◀ or ▶ to adjust PHASE. The picture will be jitter as following figure, adjust PHASE and check the picture, stop at the point that without any vertical jitter bar remaining on the



CLOCK Phenomenon

Step 8 : Press ◀ or ▶ to adjust CLOCK. The picture will be jitter as following figure, adjust CLOCK to fine-ture the video until optimal display is obtained.



PHASE phenomenon

Step 9 : Quit OSD menu by press OK button to save the settings.

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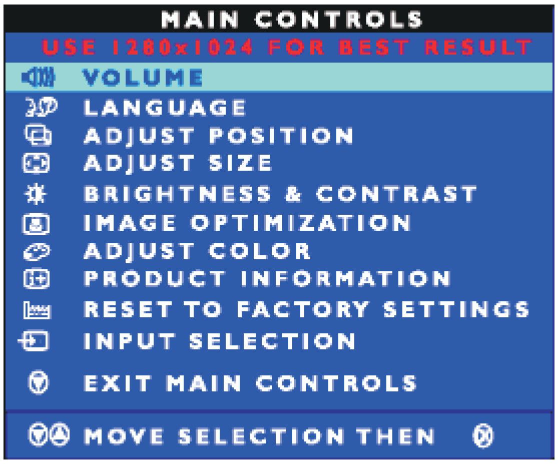
OSD Control Structure for Analog

The OSD Tree for analog video signal

Below is an overall view of the structure of the On-Screen Display. You can use this as reference when you want to later on work your way around the different adjustments.

First Level / **Second Level**

- VOLUME
- LANGUAGE
  - ENGLISH
  - ESPAÑOL
  - FRANÇAIS
  - DEUTSCH
  - ITALIANO
  - 日本語
- ADJUST POSITION
  - HORIZONTAL
  - VERTICAL
- ADJUST SIZE
  - FULL SCREEN
  - NATIVE MODE
  - USER SETTINGS
- BRIGHTNESS & CONTRAST
  - BRIGHTNESS
  - CONTRAST
- IMAGE OPTIMIZATION
  - VIDEO NOISE
    - PHASE
    - CLOCK
  - TEXT/ GRAPHICS
- ADJUST COLOR
  - ORIGINAL PANEL COLOR
  - 9300K FOR CAD/CAM USE
  - 6500K FOR IMAGE MANAGEMENT
  - USER PRESET
    - RED
    - GREEN
    - BLUE
- PRODUCT INFORMATION
  - SERIAL NO.
  - RESOLUTION
- RESET TO FACTORY SETTINGS
  - NO
  - YES
- INPUT SELECTION
  - ANALOG
  - DIGITAL
- EXIT MAIN CONTROLS


MAIN CONTROLS
USE 1280x1024 FOR BEST RESULT
VOLUME
LANGUAGE
ADJUST POSITION
ADJUST SIZE
BRIGHTNESS & CONTRAST
IMAGE OPTIMIZATION
ADJUST COLOR
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
MOVE SELECTION THEN

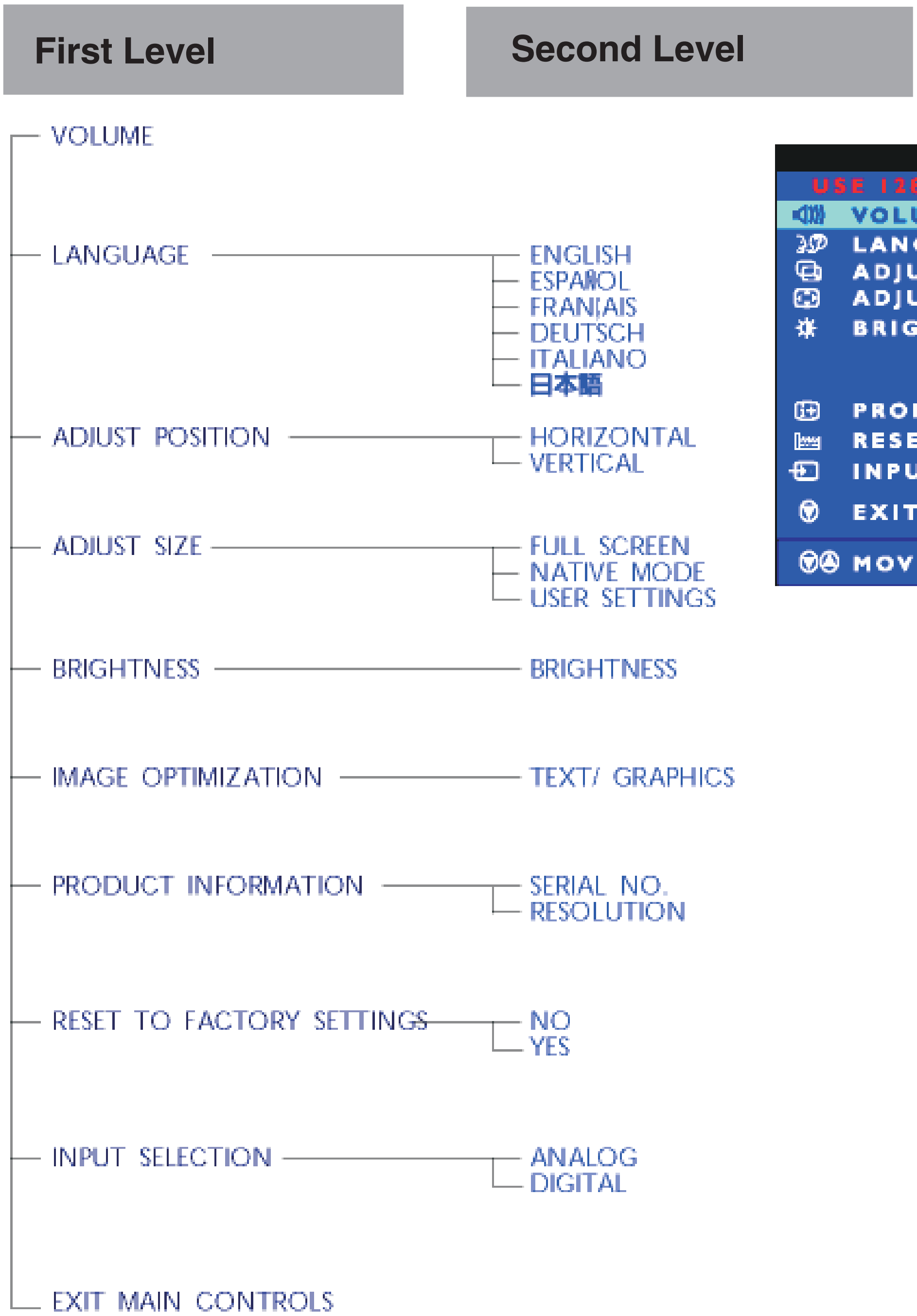
OSD Menu (Analog)

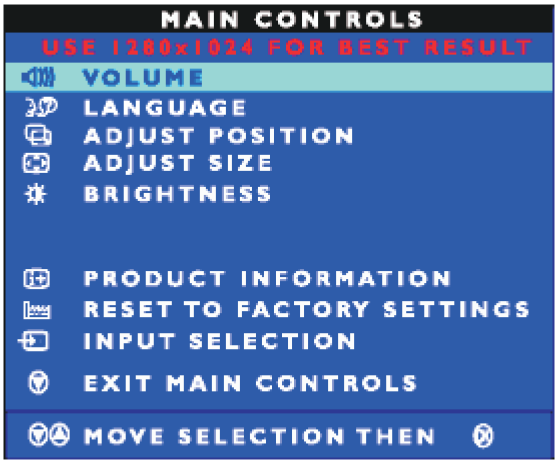
Back
Forward

OSD Control Structure for Digital

The OSD Tree for digital video signal (DVI-D)

This OSD structure is different from analog menu, there are three functions will be disable on digital OSD menu: Contrast, Image Optimization, and Adjust Color.


First Level
Second Level
VOLUME
LANGUAGE
ENGLISH
ESPAÑOL
FRANÇAIS
DEUTSCH
ITALIANO
日本語
ADJUST POSITION
HORIZONTAL
VERTICAL
ADJUST SIZE
FULL SCREEN
NATIVE MODE
USER SETTINGS
BRIGHTNESS
BRIGHTNESS
IMAGE OPTIMIZATION
TEXT/ GRAPHICS
PRODUCT INFORMATION
SERIAL NO.
RESOLUTION
RESET TO FACTORY SETTINGS
NO
YES
INPUT SELECTION
ANALOG
DIGITAL
EXIT MAIN CONTROLS


MAIN CONTROLS
USE 1280x1024 FOR BEST RESULT
VOLUME
LANGUAGE
ADJUST POSITION
ADJUST SIZE
BRIGHTNESS
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
MOVE SELECTION THEN

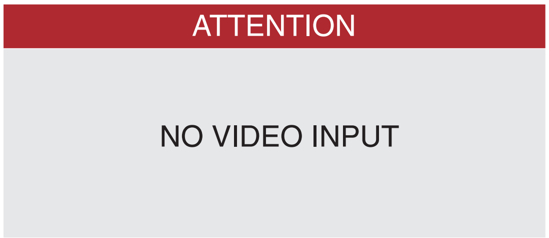
OSD Menu (Digital)

Go to cover page

OSD Attention signals

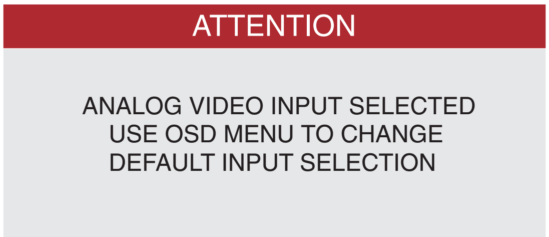
The monitor will detect various display situation automatically. When the monitor detects the problems, the screen will show the different warning signals to remind you what is happen to your monitor.

NO VIDEO INPUT
This screen appears if there is no video signal input. Please check that the signal cable is properly connected to the video card of PC.


ATTENTION

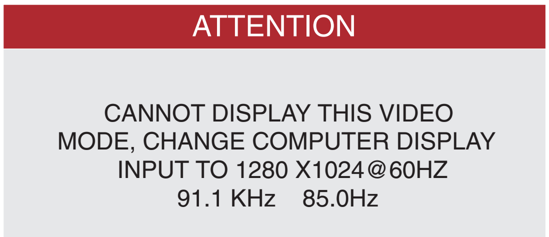
NO VIDEO INPUT

VIDEO INPUT SELECTED
This windows appears 3 seconds that show you which video input has selected by monitor when every time you turn on the monitor.


ATTENTION

ANALOG VIDEO INPUT SELECTED
USE OSD MENU TO CHANGE
DEFAULT INPUT SELECTION

CANNOT DISPLAY THIS VIDEO MODE..
This screen warns when the input frequency from the computer is not a standard video mode or out of the monitor's scanning range. Please change the display mode of the operating software in the computer(i.e. Windows) to 1280 x 1024@ 60Hz for best display results.


ATTENTION

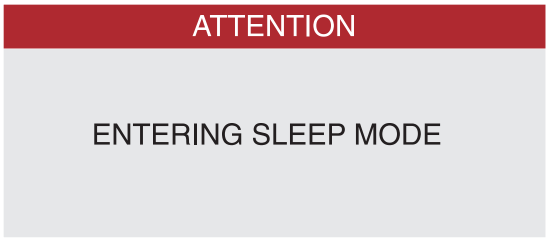
CANNOT DISPLAY THIS VIDEO
MODE, CHANGE COMPUTER DISPLAY
INPUT TO 1280 X1024@60HZ
91.1 KHz 85.0Hz

In this case, the picture will still showing on the screen about 60 seconds then shut down by monitor. Attention message will disappear as well after 30 minutes remaining then enter power saving state. (No picture, power indicator showing amber.)

USE 1280 X 1024 FOR BEST RESULT
This message appears at the top of the OSD window when the video mode input is not the recommended 1280x1024. Other modes may result in some picture distortion. Please adjust the video mode to 1280x1024 at 60Hz for best display quality.

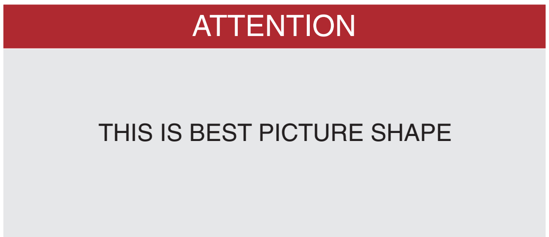
USE 1280 x 1024 FOR BEST RESULT

ENTERING SLEEP MODE
This screen appears when the monitor is about to enter the sleep mode. Please press any key on the keyboard or click the mouse to wake up the monitor and computer.


ATTENTION

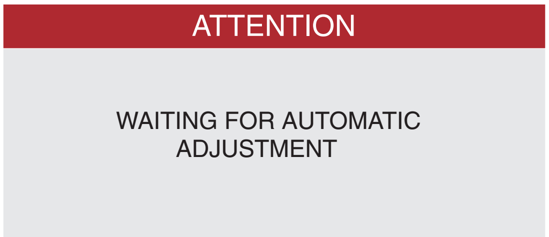
ENTERING SLEEP MODE

THIS IS BEST PICTURE SHARP
When you expand picture size by using OSD menu "ADJUST SIZE/USER SETTINGS", during the adjustment, Once the pixels number of horizontal size has reached 1280 pixels, following window will appear on the screen that remind you the resolution of video signal was expanded exactly can match the LCD panel (1280X1024).


ATTENTION

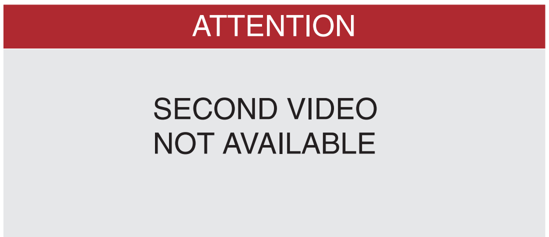
THIS IS BEST PICTURE SHAPE

WAIT FOR AUTOMATIC ADJUSTMENT
This screen appears when you touch the AUTO button. It will disappear when the monitor is properly adjusted.


ATTENTION

WAITING FOR AUTOMATIC
ADJUSTMENT

SECOND VODEO IS NOT AVAILABLE
When you select video input between Analog or Digital signal via INPUT SELECTION function of OSD menu, if the one you are selecting is not available, following message will appear on the screen then switching back to the previous setting automatically.


ATTENTION

SECOND VIDEO
NOT AVAILABLE

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Trouble Shooting

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TROUBLESHOOTING

This page presents problems that can be corrected by the user. If the problem still exists after these possible solutions, a further action has to be take by authorized technicians.

No Picture
(Power LED not lit)

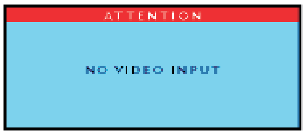
- Make sure the Power cable is plugged to the wall and back of the monitor.
- Make sure the DC power cord has been attached to the DC jack.
- First, power button in front of the monitor should be in the OFF position, then press it to ON position again.

No Picture
(Power LED is Amber or Yellow in color)

- Make sure the computer is turned on.
- Make sure the signal cable is properly connected to your computer.
- Check to see if the monitor cable has bent pins.
- The Energy Saving Feature may be activated.

Screen says

- Make sure the monitor cable is properly connected to your computer.
- Check to see if the monitor cable has bent pins.
- Make sure the computer is turned on.



ATTENTION

NO VIDEO INPUT

AUTO button not working properly

- The Auto Function is designed for use on standard Macintosh or
- IBM-compatible PC running Microsoft Windows.
It may not work properly if using non-standard PCs or video card.

Imaging Problems

Display position is incorrect

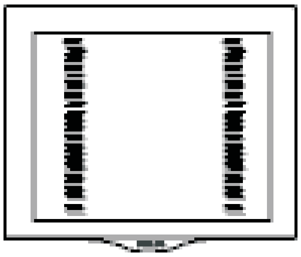
- Push the AUTO button.
- Adjust the image position using the Horizontal Position & / or Vertical Position in the Second Window.

Image vibrates on the screen

- Check that the signal cable is properly connected to the graphics board or PC.

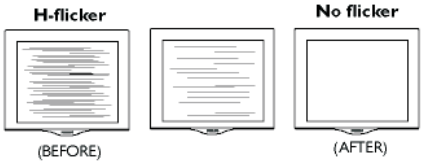
Vertical flicker appears

- Push the AUTO button.
- Eliminate the vertical bars using the Clock Adjustment in the FIRST Window.



Horizontal flicker appears

- Push the Auto button.
- Eliminate the horizontal bars using the Phase Adjustment in the First Window.



The screen is too bright or too dark

- Adjust the contrast and brightness using the First Window.
(The backlight of the LCD monitor has a fixed life span. When the screen becomes dark or begins to flicker,please contact your dealer.)

An after-image appears

- If an image remains in the screen for an extended period of time,it may be imprinted in the screen and leave an after-image. This usually disappears after a few hours.

An after-image remains after the power has been turned off

- This is characteristic of liquid crystal and is not caused by a malfunction or deterioration of the liquid crystal. The after-image will disappear after a set amount of time.

Green, red, blue, dark and white dots remain on the screen

- The remaining dots are normal charactericstic of the liquid crystal used in today's technology.

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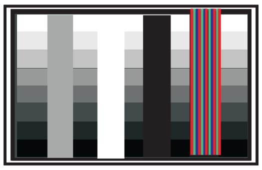
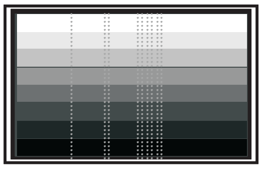
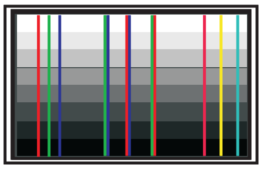
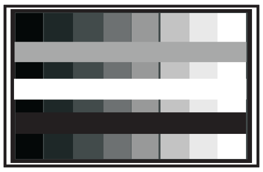
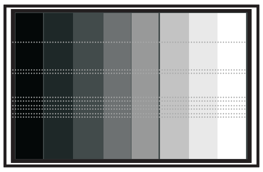
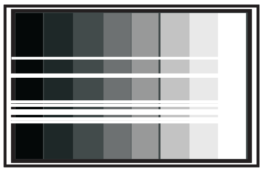
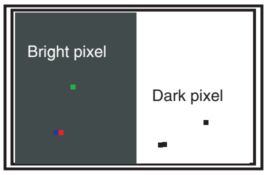
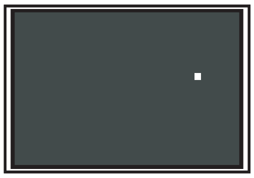
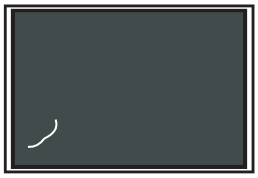
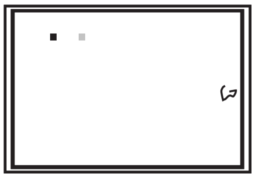
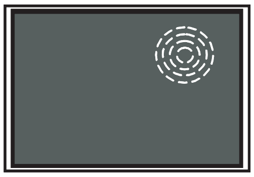
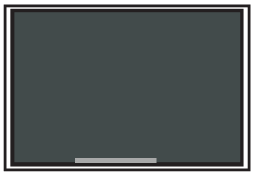
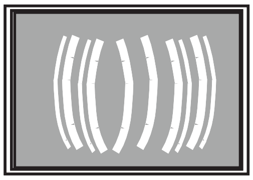
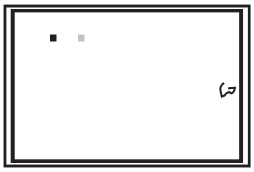
Failure Mode of LCD panel

Quick reference for failure mode of LCD panel

This page presents problems that could be made by LCD panel. It is not necessary to repair circuit board. Simply follow the “Mechanical instruction” on this manual to eliminate failure by replace LCD panel or backlight tubes.

Failure description	Phenomenon
Vertical block defect	
Vertical dim lines	
Vertical lines defect (Always bright or dark)	
Horizontal block defect	
Horizontal dim lines	
Horizontal lines defect (Always bright or dark)	
Has bright or dark pixel	
Polarizer has bubbles	
Polarizer has bubbles	
Foreign material inside polarizer. It shows linear or dot shape.	
Concentric circle formed	
Bottom back light of LCD is brighter than normal	
Backlight un-uniformity	
Backlight has foreign material. Black or white color, linear or circular type	

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